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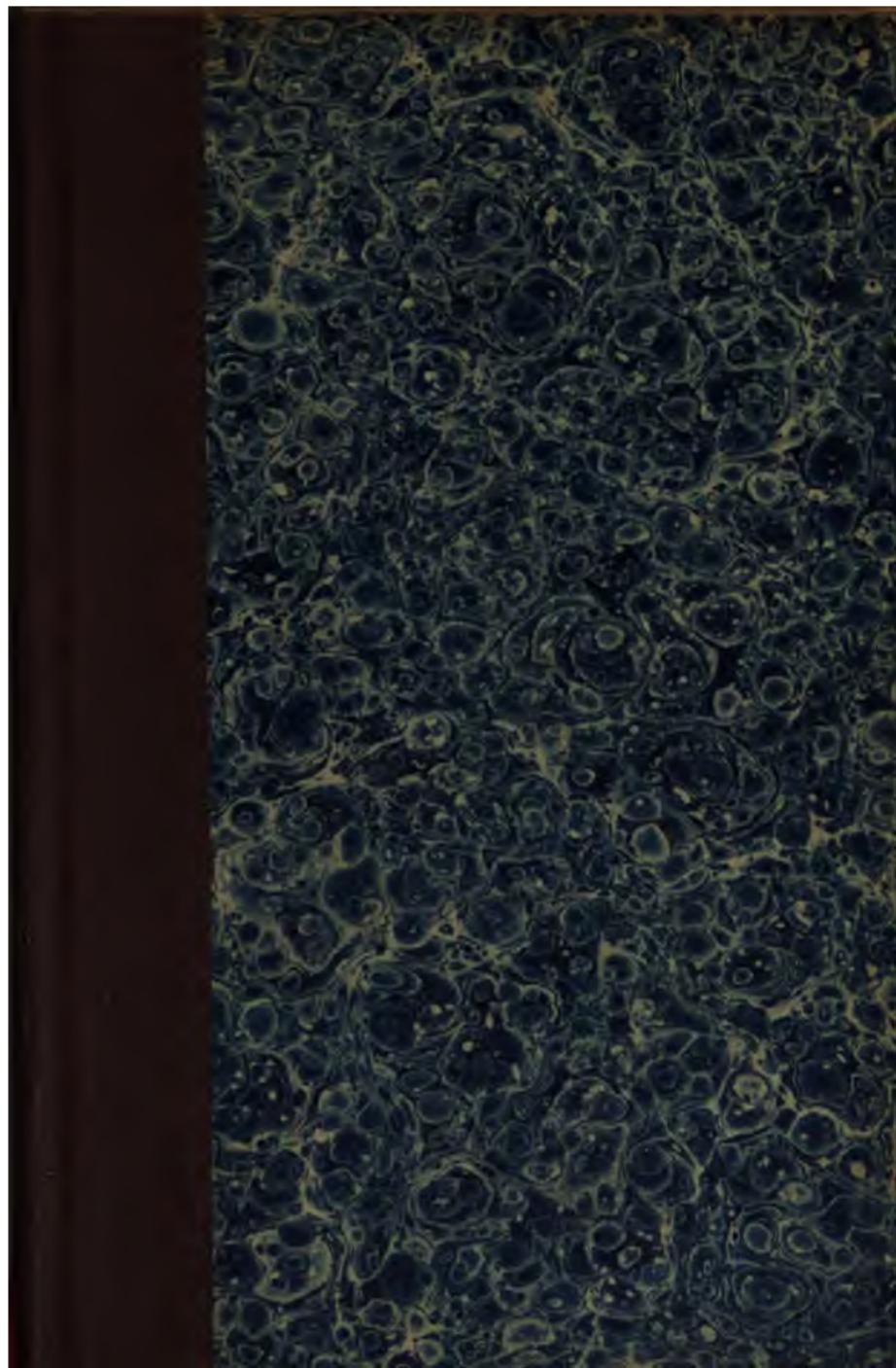
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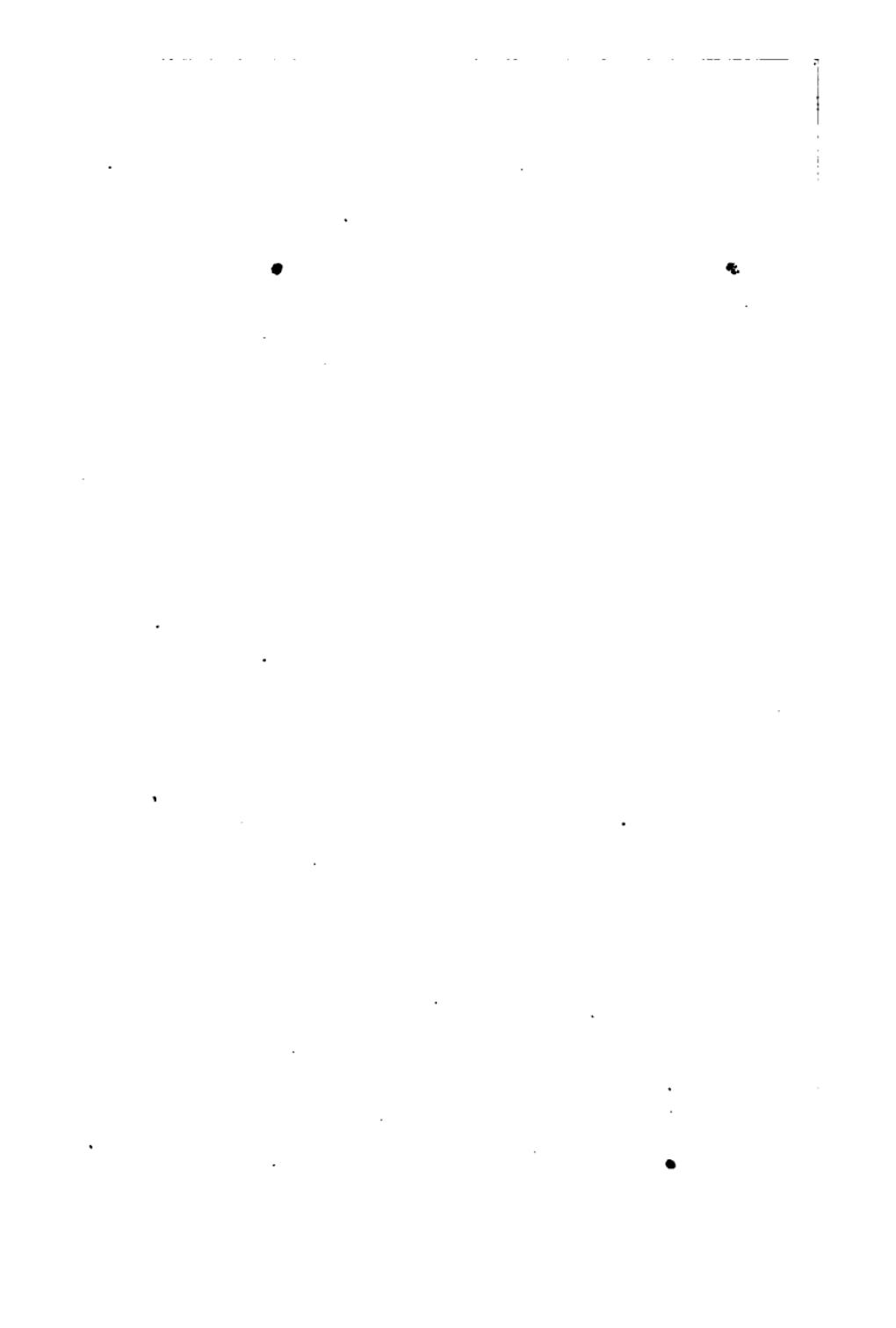
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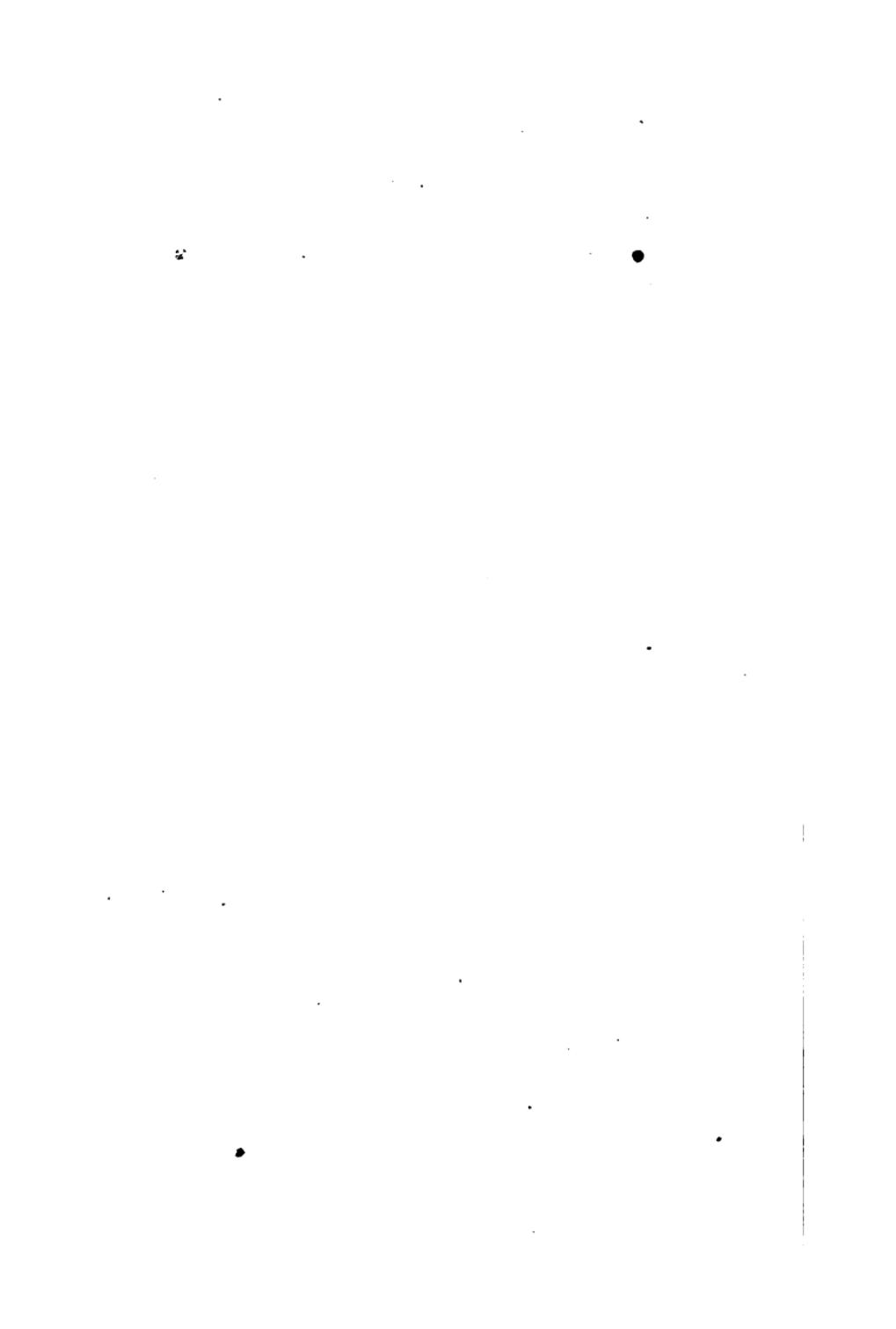
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MANUAL
OF
FIELD GARDENING,
OR
BELGIAN AGRICULTURE MADE EASY,
CONTAINING, THE
ROUTINE OF CERTAIN FIELD GARDEN OPERATIONS
In Sussex and Yorkshire,
In 1843 and 1844.

"The cultivation of the soil is the greatest of all manufactures."

Montesquieu.

Ye generous BRITONS cultivate the soil,
And o'er your hills, and long withdrawing vales
Let Autumn spread his treasures to the sun,
Luxuriant, and unbounded. As the sea
Far through its azure, turbulent extent,
Your empire owns, and from a thousand shores
Wafts all the pomp of life into your ports;
So with superior boon may your rich soil,
Exuberant, nature's choicest blessings pour.

But ye rich,
Be mindful of the rough laborious hand,
That sinks you soft in elegance and ease.—*Thomson.*

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1845.

ERRATA.

The reader is particularly desired to correct with his pen the following errors in
the press, viz.—

- Page 19, line 18, for "twelve" read "two."
- Page 23, line 24, instead of "a number" read "a quarter."
- Page 37, line 21, instead of "are" read "is."
- Page 75, line 19, instead of "Thus" read "This."

[ENTERED AT STATIONERS' HALL.]

P R E F A C E.

I now redeem a promise made to the readers of my Essays,* and present as small a book as I could possibly make, on a subject so ample, to the cultivator of a few acres and allotment tenants, on the Belgian agriculture as practised by the Eastbourne field gardeners.

The essential part of this small manual will be found in the Journal or Diary of their weekly labours. It has been deduced from returns ingeniously contrived and adopted by F. THYNNE, Esq. for the guidance of the model farmers established by him at Slaithwaite and Lingards, in Yorkshire, on the estates and under the patronage of the Earl of DARTMOUTH. They have been so useful and effectual there, that it is believed promotores of agricultural improvements elsewhere, may be assisted by their publication. With this view they have been reduced, arranged, and annotations added to them, which, I trust, may be found not less useful to the small, than the larger cultivator.

It will be perceived that the arrangement of the Diary is such, that on reference to the page for any week the reader will learn at a glance, from the operations in other places, what labours ought to be undertaken on his own farm. Tiresome repetitions in the Diary often occur;

* On Farms and Schools of Industry, &c.—London, Simpkin, Marshall, & Co.

they will help, however, to arrest more forcibly his attention. In the apophthegms interlarded with the Notes, a moral effect is intended,—knowing, that the English peasantry are naturally fond of brevity, of sententious and pithy sayings, it is hoped some of them may be retained in the memory, and have a salutary influence.

I hope, therefore, that this little Hand Book, or *Vade Mecum*, will not be an unacceptable Christmas offering to the labouring man, and come not untimely to assist those kind hearted, generous men in their labours of love for the benefit of human kind,—who, in their endeavours to improve society, wish to procure for every country cottage in Britain its rood of land, and to maintain, at the same time, a fair remuneration for the labour of its inmates,—who, in encouraging better cultivation, wish to restore sunken yeomanry to comfort and happiness,—who, by promoting the closer union of those two twin sisters, agricultural and manufacturing industry, are wishful to benefit both master and workmen,—above all, to those who, in endeavouring to unite physical and mental training in Schools of Industry, an example of which will be found in almost every page, are desirous of ensuring the future happiness and security of their country.

JOHN NOWELL.

FARNLEY WOOD,
Near Huddersfield, Yorkshire,
December 3rd, 1844.

A DIARY OF FIELD-GARDEN OPERATIONS, In Sussex and Yorkshire, DURING 1843-4.

"Let not ambition mock their humble toils, their homely joys and destiny obscure,
Nor grandeur bear with a disdainful smile, the short but simple annals of the poor."

GRAY.

THE Diary which follows is chiefly a record of the daily operations upon four small Garden-Farms, lying several miles distant from each other, near Eastbourne, in Sussex. It may be depended upon as containing a correct report of the methods of cultivation adopted by numerous garden farmers upon the estates of Mrs. DAVIES GILBERT. The farms alluded to, selected as models, were, 1st. That of the *Willingdon School*, conducted by G. Cruttenden, who occupies, in addition to the school-house, five acres of land at the usual farmer's rent. He is assisted by from five to twenty little boys, who, paying each one penny per week, receive instruction in reading, writing, and arithmetic, from nine till twelve in the morning, and in the afternoon help him in return with his farm labours and stall-feeding, from three till six o'clock. This place, adjoining the village of Willingdon, is delightfully situate, on one of the slopes declining from the Chalk Downs. It is in view of the English Channel, which, with the Martello towers along the coast as far as the eye can reach, form a striking scene. The place exhibits neatness and order without the least display.

2nd. That of the *Eastdean School*, near Beachy Head, conducted by John Harris, who holds five acres of land in addition to the school, where about the same number of boys are trained to mental and agricultural pursuits.

3rd. That of *Jesse Piper*, which is a private farm, higher up the Down than the school at Eastdean, of four acres, he is partly employed as an overseer with other work, but cultivates his plot two or three days per week, assisted by a boy, and an occasional man. He was lately examined by the committee of the House of Commons on the Allotment question.

4th. That of *John Dumbrell*, at Jevington or near to it, also a private farm of six acres, who is assisted in its cultivation by his father, seventy years of age, in addition to which he keeps a little village shop; he also was examined before the same committee. Jevington is situate about four miles from Beachy Head, and is sequestered deep in a vale amongst the chalk hills. In general the soil of these farms is formed from the disintegration of the chalk rock which is close below the surface, or of alluvial mould swept into the vallies, the colour of it is whiter than is quite agreeable to the eye, and evidently must owe much of its fertility to the labours of man, or the mildness of the climate. Such of these places as the author had an opportunity of viewing, during a visit in May last, appeared to be pictures of comfort and contentment.

July.

Week commencing Monday, July the 24th, 1843.

Sussex.

MONDAY—Willingdon School. 16 boys digging and applying liquid manure for white turnips, after spring tares. *Piper.* Doing the same. *Dumbrell.* Sowing turnips and hoeing potatoes.

TUESDAY—Willingdon School. Boys employed the same as yesterday. *Piper.* The same as yesterday. *Dumbrell.* Hoeing turnips and potatoes.

WEDNESDAY—Willingdon School. Boys employed as on Monday. *Piper.* Hoeing turnips, and mending the lucerne with liquid manure.* *Dumbrell.* Hoeing turnips, thinning mangel wurzel, and mixing dung and mould.

THURSDAY—Willingdon School. Boys employed as on Monday. *Piper.* Hoeing his 30 rods of swedes, sown about the middle of May.† *Dumbrell.* Hoeing turnips and digging up tare ground.

FRIDAY—Willingdon School. Boys dressing the ground, and sowing white turnips. *Piper.* Digging where the underground-onions came off, and sowing white Norfolk turnip seed.‡ *Dumbrell.* Hoeing turnips§ and carrots, digging up tare ground and sowing turnip seed.

SATURDAY—Willingdon School. Boys earthing up potatoes after rye. *Piper.* Digging the ground where the turnip seed was raised, and mending a rod of lucerne. *Dumbrell.* Thinning and hoeing carrots.

COW-FEEDING.

During this week one of *Dumbrell's* cows grazed during the day and was fed in the stall at morn and even with 40lbs. of Italian-rye-grass; his other cow and heifer, altogether stall fed, with 137lbs. of tares, and 27lbs. of Italian-rye-grass.

Piper has fed his cows with tares and lucerne, *cut, as it always ought to be, a day before it is given to them.*

* About twenty gallons to the rod is usually applied to lucerne, which ought to be put on as soon as the grass is cut, which never ought to be mown too low, by so doing they generally cut it four times in the summer.

+ The rod mentioned in the text is $16\frac{1}{2}$ feet square, or $30\frac{1}{4}$ square yards; a boy twelve years old will dig half a rod during his three hours of afternoon's labour, worth three-pence to the schoolmaster.

‡ A quarter of a pint of white Norfolk turnip seed is allowed for 10 rods.

§ The hoe is generally nine inches wide, and the plants fifteen inches apart, and it is always better to hoe your turnips three times over and then single them by the hand.

NOTES AND OBSERVATIONS.

In adding notes and observations to this journal, I must trouble my more scientific reader with a few theoretical remarks upon a subject closely connected and not inconsistent with the design of this little work. In general it is intended to be of a nature quite practical, so small as to take up little of the reader's time, and I hope and trust, written in language not above the level of almost any capacity. It will be my endeavour to give plain and short directions, deduced from the scientific experiments lately carried out under the auspices of Professor JOHNSTON and other labourers in the field of scientific agriculture, avoiding as much as possible all technical language, and that of theory, except what immediately follows. It will be my anxious wish that the humble cultivator may not, much longer remain, unacquainted with the practical suggestions of science.

"The chief art of agriculture depends upon the collection and future application of all those manures which are essential to vegetation."

Analogy between Plants and Animals.—Plants are formed of roots and leaves. The roots absorb from the earth liquid food into the system. It is modified in their leaves by a peculiar process. One part of such food is retained, the other is expelled.

Plants differ from animals in containing no internal sack or stomach. In the animal the food is taken into the stomach, is acted upon by certain juices there, and converted into a semi-fluid mass called "chyme." It passes into the intestines, is absorbed from the grosser food by the "lacteals," is refined and goes into the veins as "chyle," and is mixed with the blood. After passing through the lungs and becoming *decarbonated* it is then changed into blood, which contains materials for the nourishment of all parts of the system. In different parts of the body are certain glands, as the liver and kidneys, which may be compared to pipes and strainers. They secrete or separate certain substances from the blood, which are carried off as being no longer necessary to nutrition. These, as well as the superfluous portions of food not necessary to the formation of "chyle," are discharged as excrements.

In plants the stomach is the earth, the roots are the "lacteals," the sap is the "blood." The plant-stomach or the earth, furnishes the food of plants in a gaseous or fluid state, for solids cannot enter them, it is taken up by the roots. The "energy of life" in the plant can separate from heterogeneous mixtures, the elements carbon, hydrogen, nitrogen, which are its principal food. These are furnished by carbonic-acid, water, carbonate of ammonia from rain-water and decaying animal matter, &c. There are other substances required by plants, the sea-plants require iodine and common salt as condiments, the reed tribe requires silex and other substances, but every tribe exercises its peculiar choice. That important element, nitrogen, is present only in certain organic substances in plants,

July.

Week commencing Monday, July the 31st, 1843.

Sussex.

MONDAY—Willingdon School. Boys digging and manuring for white turnips after tares. *Piper.* Reaping rye. *Mem.*—when the rye is removed, the stubble is digged up, mended with liquid, and turnips sown or cabbages planted. *Dumbrell.* Hoeing turnips, mixing dung and mould.

TUESDAY—Willingdon School. Boys doing the same as yesterday. *Piper.* The same as yesterday, and mixing dung, &c. *Dumbrell.* Digging up tare ground; the heifer drew one load of manure nearly a mile up hill and down.

WEDNESDAY—Willingdon School. Boys doing the same as before. *Piper.* Mixing dung and mould. *Dumbrell,* Digging up tare ground.

THURSDAY—Willingdon School. Boys dressing the ground and sowing white turnips after tares. *Piper.* Mending more lucerne with liquid manure,* and hoeing turnips. *Dumbrell.* Digging up tare ground and sowing rape-seed.

FRIDAY—Willingdon School. Boys hoeing swede turnips. *Piper.* Hoeing turnips. *Dumbrell.* Weeding tares.

SATURDAY—Willingdon School. Boys hoeing swede turnips. *Piper.* Hoeing carrots. *Dumbrell.* Mending the cow lodge.

COW-FEEDING.

Willingdon School. The cows have been eating during the week the second cut of clover.

Dumbrell. One of his cows grazed during the day, and was fed, morn and even, in the stall with Italian rye-grass; one cow and heifer stall fed upon tares and Italian rye-grass, as before, till Wednesday, since then, both cows were fed on Italian rye grass, and the heifer upon tares alone.

* Now is the time for putting down your tank, before you may be wanted to ply the sickle. *Piper's* tank collects from the cow-house and piggery all the liquids voided there; sometimes he is accustomed to increase the strength of it by adding one bushel of soot, a quarter of a bushel of common salt, six pounds of soda, and five or six gallons of the contents of the privy tubs; the tank holds one hundred and fifty gallons of liquid, which he sometimes mixes with mould for wheat. The addition of the soda is, however, objectionable, as it will decompose the muriate of ammonia of the soot, as well as the ammonical salts of the urine, and excrementitious matter, and expel the ammonia which from its volatility will be lost. The addition of about 10 or 12 lbs. of gypsum would be decidedly better, and effective in retaining this volatile substance and agent of fertility.

NOTES AND OBSERVATIONS.

but enters largely into the composition of animal matter. The chemist can combine the elements oxygen, nitrogen, hydrogen, or separate them by the aid of his art in a few instances. But the plant surpassing his skill, is in itself a wonderful galvanic machine, can exceed all his efforts, and alone can combine these elements into organic compounds. Manure put into the earth or *plant-stomach* in a raw state, must be first digested there, as food is digested in the stomachs of animals. The digestive process is putrefaction, fermentation, decomposition. Thus organic matter is restored to inorganic, and fitted for assimilation by plants—those beautiful engines or laboratories of vegetation!! Vegetables organize inorganic matters. They are the food of domestic animals, and these the food of man. In the substance then or the excretions of man and animals must be the elements requisite for the food of plants, and the collection and proper application of them, the primary object of agriculture.—*Vide Professor Henslow's Lecture on this subject.*

"There shall be no idleness in my dominions; for if there be one man idle some other man must suffer cold or hunger. My villages shall be cleaned, that the corn may grow.—*Chinese Emperor.*

Theeconomising of manure, man's duty and interest.—We may already advert to what will hereafter be strikingly exemplified, in the practice of these small farmers, that their cares are incessant in the collection and preservation of every kind of refuse and excrementitious matter, whether solid or fluid, or however offensive may be its nature, for purposes of future utility. And here we cannot fail to be struck with those hidden causes which lead mankind imperceptibly, as it were, into habits and practices necessary to the existence of our species. In the processes of the animal economy, whereby life is sustained, there are formed, separated, and voided from the animal organism, substances endowed with qualities so offensive to our senses, particularly to the sense of smell, that we are compelled to get rid of them, and which require of man that he shall put them away, or bury them forthwith, out of his sight in our common parent, the earth. The penalty for the utter neglect of this duty would be famine, pestilential disease, and a train of human ills. Nevertheless, in these things, thought to be so utterly vile and offensive in their nature, are contained "pearls of great price," indeed above any price; which, if husbanded and duly commingled with the earth he cultivates, are the means of sustaining life by the production of the food he consumes.

Let us not then say that the fungus is alone peculiar to the dung-hill, without remembering that our own existence depends upon the same elemental matter derived from that humble source. How necessary then it is, that men and nations should attend to an object of such primary importance to their existence!! How deep the obligation we are under to attend to the economising of all the manures created near our abodes as one of the first of duties!

August.

Week commencing Monday, August the 7th, 1843.

Sussex.

MONDAY—Willingdon School. Boys were reaping wheat. *Piper.* Digging the ground where the rye came up, and mending a rod of lucerne with liquid. *Dumbrell.* Digging up tare ground and sowing turnips on the same.

TUESDAY—Willingdon School. Boys reaping wheat. *Piper.* Sowing white turnips* on the ground where the tares came off. *Dumbrell.* Hoeing carrots, turnips, reaping peas, and mixing dung and mould.

WEDNESDAY—Willingdon School. Boys reaping wheat. *Piper.* Cleaning mangel wurzel and carrots, and carrying mould to the dung-mixen. *Dumbrell.* Reaping peas, hoeing turnips and putting on 100 gallons of liquid to 4 rods or 121 square yards of Italian rye-grass after mowing.

THURSDAY—Willingdon School. Boys reaping a quarter of an acre of peas. *Piper.* Reaping wheat. *Dumbrell.* Digging up the ground, and mending the pig pound.†

FRIDAY—Willingdon School. Boys hoeing swede turnips, sown after mangel wurzel had failed. *Piper.* Reaping wheat and mending a rod of lucerne with liquid. *Dumbrell.* Digging up tare ground, mending pig pound, and sowing cabbage seed.

SATURDAY—Willingdon School. Boys hoeing swede turnips. *Piper.* Reaping wheat. *Dumbrell.* Hoeing turnips and reaping wheat.‡

COW-FEEDING.

Willingdon School. The cows were eating the second cut of clover.

Dumbrell. One cow grazed in the day, and stall-fed with Italian rye-grass till Wednesday, the remainder of the week with tares. Another, on Monday on 100lbs. Italian rye-grass, Tuesday on 100lbs. lucerne, for the two following days and Saturday on 100lbs tares, on tares and cabbage on Friday. The heifer on 64lbs. of tares each day with a few cabbages on Friday.

* When white turnips are hoed they ought to be left thicker than swedes, and you will be able to pull them a fortnight sooner.

† If you have any rubbish, or weeds, or poor mould, put these things under your pigs, and when increased to three or four cart loads, remove and compost the mess into a heap, and then begin to fill again; let your pigs lie well, and don't be afraid of getting too much manure.—*Piper.*

‡ When the harvest is thus early, you may dig up a quarter of an acre of your wheat stubble, and sow with white turnip seed, as soon as possible. Turnips will be found very handy about the following March, when you may begin to pull them for your cows, a month sooner than your rye or tares will be ready.

NOTES AND OBSERVATIONS.

"In the moral government of this world, it is most wisely ordered that whatever we wilfully waste at present, we are sure to feel the want of in future."

The field-gardener compelled to economise his manure.—His operations being confined to a small area, seldom more than four or five acres of land, he is obliged, in a space so confined and with limited means, to practice this necessary economy. He is early taught to value his cow or pig, as not merely yielding for him so much milk or so much animal food, but also as producing him the manure absolutely necessary for his future operations. The cow, the pig, are his machines for the manufacture of manure, and if its supply be deficient, he goes not elsewhere to obtain it, but sets up a new machine for its production, in the shape of an additional cow or a pig. Hence he will husband every particle of it with the greatest care: manuring as he does every crop, necessity compels him to do so; he knows his labours without this economy would be in vain. Hence also for the most part, arises the superiority of small over large farms, in regard to their relative amount of produce.

"By labours like these man receives a real increase of the seed thrown into the ground, in a kind of continual miracle wrought by the hand of God in his favour, as a reward for his innocent life and virtuous industry.—*Franklin.*

Economy of manure in Flanders.—Strangers are perfectly astonished by the frequent manurings of the Flemish farmer, and are led to wonder how all the manure is obtained, until they observe more minutely the method of soiling, cattle, &c. In every town and village you observe the greatest cleanliness, for their pavements and all dirty places are carefully swept with brooms, and hourly resorted to by professed scavengers as sources of profit, every particle of vegetable or animal refuse is sought out with great avidity for this purpose, and in Flanders as in China manure is quite an article of trade. The selling price of each description is accurately defined. Towns let the cleansing of the streets and public retiring places at great rates, and we are informed by M. CHAPTEL, "that there are in every town sworn brokers expressly for the purpose of valuing night-soil; and that these brokers know the exact degree of fermentation in that manure which suits every kind of vegetable at the different periods of its growth."

"Without manure there is no corn—without cattle there is no manure—and without green crops and roots cattle cannot be kept.—*Flemish maxim.*

Cow Lodges.—If then the collection, and application to the soil of all the manure created near our abodes is the chief point, the very foundation of good husbandry, a few practical directions derived from experience, with hints relative to affairs of such importance, may be acceptable to the reader. The commencement of the manufacture of your manure is in the cattle-house, therefore let every exertion be made to have the place complete. Let the building itself stand high and dry, and if possible let your cattle stand at

August.

Week commencing Monday, August the 14th, 1843.

SUSSEX.

MONDAY—*Willingdon School.* No report for the week, probably the little boys out with the farmers. *Piper.* Reaping wheat. *Dumbrell.* Digging up tare ground, and reaping wheat.

TUESDAY—*Piper.* Reaping wheat. *Dumbrell.* Digging up tare ground, reaping wheat, and hoeing turnips.

WEDNESDAY—*Piper.* Cleaning pig sty, and reaping wheat. *Dumbrell.* Transplanting swede turnips, digging up tare ground, and reaping wheat and oats.

THURSDAY—*Piper.* Reaping wheat. *Dumbrell.* Mowing oats, and reaping wheat.

FRIDAY—*Piper.* Mending lucerne with liquid. *Dumbrell.* Reaping oats, and wheat.

SATURDAY—*Piper.* Finished wheat reaping, and pulling peas. *Dumbrell.* Mowing oats, reaping wheat, and emptying the privy pails.*

COW-FEEDING.

Piper. Cows are feeding upon white turnips, grown upon the land where the rye and tares came off last spring!!

Dumbrell. During the week one cow grazed in the day, and fed morn and even with 40lbs. of cabbage. And one cow and heifer stall-fed entirely, with 164lbs. of tares.

* A most ingenious method of collecting the whole excrementitious matter voided in the privies, is followed by the Eastbourne tenants:—An ale cask, with one end knocked out or large butter firkin is provided, about half way down its sides, two iron ears or handles are strongly fixed, for the convenience of removing it, two of them are usually placed under the privy seats, and removed by two persons each taking hold of a handle. These tubs being turned upside down, the contents are received upon mould, and immediately composted with more mould, coal ashes, or other refuse. A most potent compost, probably not inferior to guano may be made by mixing the contents, of one of these privy tubs, with about six times its bulk of well sifted dry coal ashes and 8 or 10lbs. of gypsum, and beating it up to the consistency of masons' lime, with as much tank liquid as it will retain. This mixture, thrown under a shed, will dry spontaneously, and prove a most valuable top dressing for wheat, upon which it may be sown by hand, for all offensive smell quickly disappears, being speedily removed by the action of the gypsum, and the retentive nature of the mould or ashes.

If the importance of this simple contrivance, this observation of an eminent philosopher will afford a striking proof:—“If we admit,” says he, “that the liquid and solid excrements of man amount on an average to 1½ lbs. daily, (¾ lbs. urine, and ¼ lbs. faeces) and that both taken together contain 3 per cent. of nitrogen, then in one year they amount to 547lbs., which contain 16.41 lbs. of nitrogen, a quantity sufficient to yield the nitrogen of 800lbs of wheat, rye, oats, or of 900lbs. of barley.”—*Boussingault.*

NOTES AND OBSERVATIONS.

either end of it, facing each other, with a paved road-way betwixt for the convenience of feeding them. This road-way must be a thoroughfare with spacious doorways, so that your forage cart may pass completely through the building, and as it goes along, the attendant may toss green feed on either hand to the cattle.

Feeding Troughs.—Let your animals be fed out of stone, or brick-work bins, or troughs; the former may be easily formed, by placing a double row of flag-stones on both sides of the thoroughfare and nearly across the cow-house, partly within the ground, at about thirty inches from each other, and the row nearest either side of such thoroughfare may stand about a yard above the floor, and that nearest the cows about two feet. Let the bottom be paved, and the enclosed space so formed, be divided with stones at convenient distances, when with a light rail of wood running round the top and bolted to the stones, a series of feeding troughs will be formed and held firmly together.

"Improve those homes,
Where all the creatures are your servitors."—*Fletcher.*

Gutters, &c. within the Cow Lodge.—The cows may be ranged with the bins in front, and tied in the usual manner. They must enter at a door of ordinary size, close in each corner of the building, and pass along the group to their stalls, while at the corner opposite a small opening provided with a door must be left for the ejection of their manure. This group, as it is termed in Yorkshire, or space behind the cattle, must be at least four feet broad, most accurately paved, and the joints well cemented. The paving ought to be laid down upon clay puddle, or well rammed earth, and must incline to a channel or gutter cut out of the solid, to a depth of two inches, in stones laid down in one continuous line, upon well rammed clay puddle, and jointed with the best cement. This line of stones must have an inclination towards the manure hole, and pass under it, through the wall, so that the liquid manure may run freely from the floor, where it is received from the cattle, and afterwards be collected in, and conveyed by the gutter to the tank, for its reception, placed without the building.

"The winds do sweep these chambers ev'ry day."—*Fletcher.*

Circulation of air in Cow Lodge, &c.—With two spacious doorways, partly in front, and two common sized ones behind, and the manure holes opposite to these, but all of them placed so that no currents of cold air from without, may come in contact with the animals, we may depend on a free circulation of the atmosphere, and that the internal temperature, in summer, will be more agreeable and cooler in general, than that without. In summer time these doorways may remain quite open during the day, and be closed at night by open wicket gates only, to prevent intruders; in winter, of course by tight doors.

August.

Week commencing Monday, August the 21st, 1843.

Sussex.

MONDAY—*Willingdon School*. Boys carrying wheat and oats. *Eastdean School*. Holyday for the boys, master reaping wheat, hoeing turnips.* *Piper*. Carrying wheat. *Dumbrell*. Reaping wheat.

TUESDAY—*Willingdon School*. Reaping wheat. *Eastdean School*. Boys thrashing peas, turning barley, and planting cabbages for the winter. *Piper*. Thrashing wheat.† *Dumbrell*. Reaping wheat.

WEDNESDAY—*Willingdon School*. Boys reaping red wheat. *Eastdean School*. Boys cleaning the school, the pigstyes, emptying the tank. *Piper*. Thrashing wheat. *Dumbrell*. Rainy day, attending the cows, &c.

THURSDAY—*Willingdon School*. Boys reaping red wheat. *Eastdean School*. Boys emptying the portable privy tubs, carrying contents to the land, and the tank of the pigstyes, *Piper*. Thrashing wheat, and mending lucerne with cow liquid.

FRIDAY—*Willingdon School*. Boys reaping red wheat. *Eastdean School*. Boys reaping wheat, turning it to dry, and tying it up. *Piper*. Cleaning wheat, and reaping barley. *Dumbrell*. Mowing barley and oats, reaping wheat.

SATURDAY—*Willingdon School*. Boys reaping red wheat, and carrying liquid manure to the rye, about to be sown on stubble. *Eastdean School*. Boys emptying the portable privy pails, and tanks. *Piper*. Reaping barley. *Dumbrell*. Mowing seed tares, and reaping wheat.

COW-FEEDING.

Dumbrell. One cow grazed in the day, and fed in the stall at noon and even with 40lbs. of cabbages till Friday, the remainder of the week with mangel wurzel leaves. Another cow and heifer entirely stall-fed on 164lbs. of tares per day during the week.

Willingdon School. Cows feed upon the second cut of clover and white turnip.

Piper. Cows feed upon white turnips and lucerne.

* It is better always to hoe your turnips three times, and then go over them with the hand.

† *Chaff*.—Take care of all your chaff, &c., when you winnow corn of any kind, and preserve it for mixing with your boiled turnip mash for the cows in winter.

‡ The wheat is reaped close to the ground, after being quite ripe, and set up six sheaves in a shock.

NOTES AND OBSERVATIONS.

"Tis education forms the youthful mind;
Just as the twig is bent, the tree's inclin'd."

Thrashing Floor and Industrial School.—There is a beautiful arrangement adopted at Willingdon school, which would make your cow-house complete. A well boarded floor is placed above the cattle, upon which the corn is thrashed. At one end is a convenient school-room, entered from without, and immediately over the cattle, the animal heat from which will sustain a warmth in the room, and their contiguity will promote the health of the children. The thrashing floor being near at hand, and entered from without by another door very near that of the school-room, the scholars are easily transferred, from book-work, to manual labour. If you live in an agricultural district, and among sensible neighbours, you may make use of the little hands of children in the same way, in the cultivation of your small farm, and give them the blessings of education, by three hours teaching in the morning, in return for three hours of their labour in the afternoon.

"The work, divided aptly, shorter grows."—Hor.

Convenience of a well-arranged Cow Lodge.—In feeding the cattle, the attendant will find the cow-house thoroughfare most convenient. With his cart, in the summer months, he may enter at one door and pass between two rows of his cattle, serve them with their green food, and deposit the remainder upon the floor for future use, passing, without turning round, through the opposite door. In winter, with his hand-barrow full of turnip mash, or boiled roots, he may, with his shovel, serve out, by throwing into the stone troughs to each cow, her allotted portion of food, placing her hay or straw in the same receptacle, with the greatest ease and advantage to himself.

Composting Yard.—The commencement of the manufacture of manure is within these offices or cattle lodges, the continuation is in the composting yard, which ought to be placed on a lower level, and immediately behind the cow-house. I would enclose this important place, from the main farm yard, by a wall six feet high, of a semi-circular form, and nicely coped, reaching from the external wall of the piggery to that of the privy, and embracing a roomy space, taking up on one side, the length of the cow-house and breadths of the pig yard and privy shed. An opening must be left in the centre of it, which I would close by a rustic door, of neat homely manufacture. From this entrance, a paved road about five or six feet broad, edged with flag-stones, and standing about three feet above the surface, may be formed up to the back door of the cow-house thoroughfare, so that a cart may pass through the yard and forward through the cow-house in a straight line. The courses of stones in the wall ought to incline inwards; if lime be used, the inside must be well pointed.

August.

Week commencing Monday, August the 28th, 1843.

Sussex.

MONDAY—*Willingdon School.* Boys carrying peas. *Eastdean School.* Boys reaping oats, and beans, and tares. *Piper.* Trussing straw.* *Dumbrell.* Reaping, a wet day.

TUESDAY—*Willingdon School.* Half day wet, boys digging early potatoes, and in the school-room. *Eastdean School.* Boys binding sheaves, thrashing barley, digging potatoes. *Piper.* Trussing straw. *Dumbrell.* Mending four rods (121 square yards) with 100 gallons of liquid, turning barley and oats.

WEDNESDAY—*Willingdon School.* Boys mowing barley. *Eastdean School.* Boys emptying the portable pails, and tank. *Piper.* Trussing straw, and digging pea ground. *Dumbrell.* Turning peas and oats, reaping wheat, carrying peas and oats.

THURSDAY—*Willingdon School.* Boys tying up barley sheaves. *Eastdean School.* Boys thrashing barley, cleaning it, and reaping wheat. *Piper.* Digging pea ground, and sowing white turnips on the same. *Dumbrell.* Binding oats.

FRIDAY—*Willingdon School.* Boys thrashing, with machine, the allotment tenants' wheat. *Eastdean School.* Boys clearing the pigstyes, and emptying the pig-pound tank. *Piper.* Cleaning the pigsty, and mending lucerne with liquid. *Dumbrell.* Binding up, and carrying oats.

SATURDAY—*Willingdon School.* Boys doing same as yesterday. *Eastdean School.* Boys emptying portable pails or privy tubs, and clearing the ground where the turnips grew. *Piper.* Digging up potatoes, and housing straw. *Dumbrell.* Carrying oats; raking the stubble.

COW-FEEDING.

Willingdon School.—Cows living on clover and white turnips.

Dumbrell.—One cow grazed in the day, and fed morn and even in the stall with mangel wurzel leaves. One cow and heifer stall-fed on 164 lbs. of tares per day, till Thursday, the remainder of the week entirely on clover.

Piper's Cows still feeding on lucerne.

* Be sure and thatch your straw well, if you have not room for it within doors
—*Piper.*

NOTES AND OBSERVATIONS.

"All things without, which round about we see,
We seek to know, and how therewith to do." —*Mr. J. Davies,*

Dung heap Mixens.—Thus taking a good sweep behind the cow-house into the main yard, you will have a spacious area, divided by a roadway in the middle, and allowing on either side a roomy floor, quadrant shaped, upon which to compost the manure ejected upon it from the cow-house. It will be enclosed by a wall, acting as a breastwork to the manure heap when formed, and will prevent evaporation, and escape of liquid from its sides, by restoring it to the floor of the mixen. This yard is to be your agricultural laboratory, for truly, many chemical changes will there be effected, although invisible to you; and a great variety of valuable chemical products obtained, to be afterwards applied by you to the promotion of vegetation.

As the dung mixen which contains these products is the most important agent in your care—it is a thing for you to be very proud of. You may send across the seas, to the Chincha islands, or to Ichaboe, for guano, but in a dung mixen, properly compounded, you will find, to a certain extent, all the ingredients that give that excellent manure its value.

Tank.—But in putting down the tank, or forming the floors for these mixens, all your care will be required so that none of your fluids may be lost. The best place for the tank will be near the entrance to the composting yard, partly under one of the mixens, but also reaching under the wall into the main yard, so that its contents may be inspected from without. There let it be placed, in a pit sunk within the ground, so low, that there may be a good descent towards it from every part of the yard.

It may be formed of bricks, or what is better, of stones grooved and jointed, and placed upon a floor of well puddled clay at the bottom of the pit, and after being placed there, cemented well together, enwrapping it in clay puddle well beaten down at its sides, particularly at the bottom and corners. After the tank is completed, let your gutters or channelled stones be laid down to the tank in a direct line, across the floors of the mixens, from the cow-house, piggery, &c., with the same care as before, and then let the whole floors be filled, to the height of the channel stones, with well beaten clay puddle, and inclining from the outer walls in all directions to them. Let these tight clay floors be paved with any kind of rough stones, so that all drainings from the mixen by falling upon them may be conveyed to the gutters, and joining the liquid in its passage from the cow-lodge or other sources, both may flow without interruption to the tank. To promote this all the gutters, as also that part of the tank which is intended to lie under the mixen, must be covered with loose stones, to prevent the intrusion of manure from above them. Let the water from the eves of the building, and top water from every source, be led away altogether from this yard, and your manure manufactory, with the exception of placing the pump, is completed.

September.

Week commencing Monday, September the 4th, 1843.

Sussex.

MONDAY—*Willingdon School.* Boys thrashing wheat. *Eastdean School.* Boys holyday, master hoeing between the cabbages, and digging potatoes. *Piper.* Digging up potatoes. *Dumbrell.* Carrying barley, and wheat.

TUESDAY—*Willingdon School.* Boys thrashing. *Eastdean School.* Boys carrying wheat, thrashing it, and picking turnip leaves for the cows. *Piper.* Cleaning lucerne, and mending it with liquid manure.* *Dumbrell.* Hoeing turnips, carrying wheat.

WEDNESDAY—*Willingdon School.* Boys thrashing wheat. *Eastdean School.* Boys emptying privy tubs, and mixing up cow liquid with mould. *Piper.* Hoeing white turnips after tares, and pulling abundance for the cows.† *Dumbrell.* Thrashing peas.

THURSDAY—*Willingdon School.* Boys thrashing wheat and tying up straw. *Eastdean School.* Cleaning wheat, trussing straw, building a wheat rick. *Piper.* Hoeing turnips. *Dumbrell.* Carrying wheat, hoeing turnips.

FRIDAY—*Willingdon School.* Cleaning the allotment tenants' wheat. *Eastdean School.* Building two oat ricks, carrying wheat, and cleaning barley. *Piper.* Thrashing barley *Dumbrell.* Hoeing barley.

SATURDAY—*Willingdon School.* Boys cleaning wheat. *Eastbourne School.* Boys cleaning the pigsty, and school-room, and emptying the tank. *Piper.* Digging ground for rye sowing. *Dumbrell.* Hoeing turnips, carrying seed tares and dung with the heifer.

COW-FEEDING.

Willingdon School. Cows living on clover and white turnips.

Dumbrell. One cow grazed during the day, and fed in the stall morn and even with mangel wurzel leaves. One cow and haifer entirely stall-fed upon 164 lbs. of clover.

* *Lucerne.*—On the 6th of September, when *Piper* applied liquid to his lucerne, he had already cut it three times during the season, and was on the eve of cutting it the fourth.

+ *Turnips after Tares.*—At this season the turnips after tares are generally pulled in the South for the cattle, and plenty left to stand the winter for them. *Piper* strongly advises that plenty of manure shall be used for the crop of turnips after tares, and observes that if two crops will not pay for well manuring, one crop he feels assured cannot do so.

NOTES AND OBSERVATIONS.

"Let every thing have its right place."—*Boscom.*

Tank liquid Pump.—Within the partition wall, and near the doorway of the composting yard, place down your pump, so that its working barrel being buried in the manure heap up to the cistern, the freezing of its contents may thus be prevented during winter. The lever of the pump must project over the wall, and be worked in the main yard, while its delivering pipe may be furnished with wooden spout eight or ten feet long, connected by a swivel joint, round which it may be turned horizontally—inwards—over the manure, in order that the tank liquid may be pumped and made to flow over either mixen—or outwards, that it may be delivered into a water barrel mounted upon wheels, standing in the main yard, and to be afterwards removed to the growing crops, or for other purposes.*

Size of Tank.—In regard to the size of the tank, one of five feet in length, three feet in breadth, and three feet in depth, has been found quite sufficient for eight or ten head of cattle, it will be filled generally in about 17 days. It requires about from 45 to 60 minutes to empty such a tank, and spread its contents upon grass near the homestead. The cost of one in the west of Yorkshire, of the above dimensions, exclusive of digging the pit, and the puddling, will be about fifty shillings.

"Necessity the mother of invention."—*English Proverb.*

Temporary Tank.—If a cottager, or his landlord may not wish to be at the expense, a good substitute may be employed, by sinking within the ground, one or two oil pipes, or sugar hogsheads, connected at the bottom by a tube, and placing them upon a bed of puddled clay well beaten, having the sides well enwrapped with the same material; as the girths decay, the vessels will remain firmly united together from the external pressure, and last many years, especially if the inside be charred. I must beg you, however, during the fixing of these things, always to remember, and have uppermost in your mind, that a single aperture, through which a knitting needle could scarcely pass, may be the means of tapping your tank, and withdrawing its contents in part, to the quarry beneath for years, while you may remain in ignorance of its existence.

The Piggery and Privy.—The piggery ought to be placed at one end of the cow-house, the privy at the other, the latter furnished with its adjoining covered-shed, &c. in which to form night-soil composts, and with a urinal for the yard, and to receive whatever chamber-lige is made in the dwellings, or on the premises. The piggery must be furnished with a yard, reaching to the back of the cow-house, and both offices must have gutters to convey the fluids voided in them to the composting yard channels, and thence to the tank.

* At the request of the author, Messrs. Jere Kaye and Co., of the Huddersfield Foundry, have taken the trouble of forming a neat, light model of a tank pump, and have supplied his friends with them, at from 35 to 40s. each, according to the diameter of the working barrel.

September.

Week commencing Monday, September the 11th, 1843.

Sussex.

MONDAY—*Willingdon School.* Boys carrying red wheat. *Eastdean School.* Boys had holiday, master digging up potatoes, cleaning barley. *Piper.* Preparing wheat stubble for rye or tares. *Dumbrell.* Mowing stubble, carrying dung with the heifer, thrashing tares and wheat.

TUESDAY—*Willingdon School.* Boys carrying barley, getting out liquid manure for rye. *Eastdean School.* Digging tare ground, hoeing cabbages, cleaning school-room. *Piper.* Digging potatoes. *Dumbrell.* Mowing stubble, thrashing wheat, carrying out dung with the heifer.

WEDNESDAY—*Willingdon School.* Boys digging for rye as spring food. *Eastdean School.* Boys emptying the privy tubs, tank, and cleaning tares. *Piper.* Digging up potatoes. *Dumbrell.* Mowing stubble, carrying dung with the heifer.

THURSDAY—*Willingdon School.* Boys digging for rye. *Eastdean School.* Boys thrashing beans and wheat, and cleaning the pigstyes. *Piper.* Digging potatoes. *Dumbrell.* Mowing stubble, carrying dung.

FRIDAY—*Willingdon School.* Boys digging for rye. *Eastdean School.* Cleaning school-room, &c. taking off turnip leaves for the cows. *Piper.* Preparing dung heap. *Dumbrell.* Mowing stubble, thrashing wheat, carrying dung with the heifer.

SATURDAY—*Willingdon School.* Boys digging for rye. *Eastdean School.* Boys cleaning school-room, emptying the privy tubs, and gathering turnip leaves for the cows. *Piper.* Digging up potatoes. *Dumbrell.* Mowing and raking stubble, carrying manure with the heifer, thrashing wheat.

COW-FEEDING.

Willingdon School. Cows living upon clover and white turnips. *Dumbrell.* One cow grazed in the day, fed in the stall morn and even with mangold wurzel leaves. One cow and heifer stall-fed entirely, with 164 lbs. of clover for six days, and one day upon tares. *Piper's* Cows living upon white turnips and lucerne, in the stall.

N.B. Be sure to keep your cows within doors at nights; for now is the time they will get low in condition if you are not very careful. Let them have a little extra feeding; you have hay chaff, give them each about a gallon of it, mixed with a gallon of potatoes, twice a day. If they happen to have the yellow, a complaint caused by obstructed perspiration, the following is a good remedy for it, viz.—2oz. of soft soap, 3oz. of oxtraway seeds, and 3 pints of beer boiled well together.

NOTES AND OBSERVATIONS.

"The surest way to obtain the assistance of others, is to shew a disposition to assist ourselves."

Cattle Soiling.—As it may happen, however, that the arrangements within your cow-house are already formed, or that you do not keep sufficient cattle, or from other causes, you may not be induced to undertake all the improvements which I have been thus minute in describing, still, I trust your landlord may assist and encourage the introduction of as many of them as possible, and that all your thoughts may be intent upon making your cow-house in every way convenient, for your own sake and for the health of the animals. There is one thing in particular to which it is no less your interest than your duty to attend—the collection of all the liquid and solid manure voided there; for the chief object you have in view, in bringing green food to your cattle in the stalls, instead of taking them out to pasture in the fields upon that green food, is that you may more completely economise their manure.

"It is better to give heed in time than to repent afterwards, in finding the want of that which we might have had."

Chusing Seed for Green Crops.—Much of your success, next year will depend upon the green crops for spring fodder that you are now about to provide, therefore, use every exertion to ensure good crops of rye, and winter tares. In chusing the seed for the latter there is a difficulty, for that which you may procure from the dealers may sometimes be the produce of the tare sown in spring. Where there are allotment tenants, sufficient seed from the winter tare, grown upon somewhat poor soil, ought to be preserved by one or more of them, for the supply of the whole. The winter and spring tare are the same plants in species, but of different habits as to ripening, and their seed so like each other, that we have no means of distinguishing one from the other. Therefore be careful, *very careful*, and do not sow, in autumn, seeds produced from the spring tare, for the plants may perish during winter. Moreover, clean your land, well, so that neither your crops of rye nor tares, may have to struggle with weeds.

"Thrash seed, and sow tares, September doth cry,
Then dig stubble o'er, and be sowing of rye."—*A. J. per.*

Rye Sowing and quantity of Seed.—Now is a good time for sowing rye. It is frequently sown in August, and the later you sow, the more seed you must use; two and a-half bushels per acre, is the quantity of seed generally sown at an early period, but deferred sowing, may make three bushels, or more, necessary. It may be sown in drills or broadcast, as at Eastbourne; in the former case three bushels of seed will be sufficient, in the latter, it is usual to sow four bushels per acre; sow thus plentifully, that the crop being thick it may be cut the sooner. Work your manure as fine as possi-

September.

Week commencing Monday, September the 18th, 1843.

Sussex.

MONDAY—Willingdon School. Boys carrying out solid manure for winter tares after rye, for spring food. **Eastdean School.** Nine boys digging and picking stones, rest gleaning with the farmers. **Piper.** Digging up potatoes, and preparing ground for wheat. **Dumbrell.** Stacking stubble, hoeing turnips, thrashing wheat.

TUESDAY—Willingdon School. Boys carrying manure out. **Eastdean School.** Boys gleaning the stubbles, digging the ground where the tares were grown. **Piper.** Digging up potatoes. **Dumbrell.** Carrying dung with the heifer, hoeing turnips, thrashing wheat.

WEDNESDAY—Willingdon School. Boys digging up early potatoes. **Eastdean School.** Boys emptying the portable pails, and breaking leaves from the turnips. **Piper.** Hoeing turnips. **Dumbrell.** Raking stubble, thrashing and winnowing wheat, carrying dung with the heifer.

THURSDAY—Willingdon School. Boys digging up early potatoes. **Eastdean School.** Boys emptying the pigstye tank, carrying contents to the wheat stubble. **Piper.** Digging up potatoes, mixing up manure. **Dumbrell.** Raking stubble, thrashing wheat, digging and carrying potatoes, and dung with the heifer.

FRIDAY—Willingdon School. Boys digging up early potatoes. **Eastdean School.** Boys picking weeds from potatoes and carrots, and carrying them to the pigs.* **Piper.** Digging wheat stubble, for rye and tares. **Dumbrell.** Stacking stubble, thrashing wheat, digging potatoes, carrying manure.

SATURDAY—Willingdon School. Boys thrashing peas for the pigs. **Eastdean School.** Boys holyday, master digging up potatoes for the pigs, &c. **Piper.** Digging up potatoes. **Dumbrell.** Mowing stubble, carrying dung.

COW-FEEDING.

Willingdon School. Cows fed on clover, white turnips, and a little chaff.

Dumbrell. One cow grazed in the day, stall fed morn and even with mangold wurzel leaves. One cow and heifer stall fed with tares.

N. B. Look carefully to your stock all this month and next; if you do not they will get low in condition.

* *Early Barley for Pigs.*—Get some of your early barley ground for the pigs as soon as thrashed, and mix it well with boiled potatoes; one bushel now will do them as much good as two in cold weather; be very careful to smash all your potatoes, and let them be given only just warm.

NOTES AND OBSERVATIONS.

ble, and put on 5 bushels to the rod of stable dung, before the ground is dug over, or 25 gallons of liquid to the rod, then sow the seed and cover more slightly than for wheat. In manuring for rye, indeed any crop whatever, do not bury the manure too deep, just cover it up, and no more; for every shower that falls, has a tendency to carry down the soluble part of it still deeper.

"Agriculture is a great experiment—the more successful, as the details of it are executed with judgment."

Winter Tare Sowing and quantity of Seed.—Always strive to sow early, particularly for your first crop of tares, which may either be in drills or broadcast; in the former case you may keep the crop clean with the hoe, and by stirring the soil improve the growth of the plant. At Eastbourne, both methods are practised; the distance of the rows in the drill method is about six inches, and the quantity of seed *two and a-half bushels* per acre, while *four bushels* is the quantity used when sown broadcast. The drills are formed with a wheat hoe, and the seed deposited at a depth of about twelve inches. In both cases they add, either by digging in broadcast, or by placing upon the seed in the drills, as much fine worked mouldy manure, as can be spared from their wheat mixen. "There is probably no crop that will pay the farmer better, for the manure he may add, than the vetch, it not only increases the bulk of his crop, but pushes and brings it forward, at the very time when food is scarcest, and if the tares are, as they always should be, succeeded by turnips, the land will be more ready for them."* It is customary, in most places, to mix about one quarter, by measure, of rye, with seeds of the winter tare. The rye supports the tare plant, and is not often rejected by the cattle. The writer may be allowed to add, that the present year, his produce was, in a crop of this kind, after the rate of ten and a-half tons of green food per acre, or when dried, after the rate of two tons and three-quarters of vetch-hay. Theory informs us that this two tons and three-quarters should be equal in sustaining power to more than six tons and three-quarters of the hay of the natural grasses. Vetch-hay is perhaps too coarse to be relished as dry fodder, but chopped up and steamed with turnips into mash, it would doubtless prove very excellent food for cattle.

Steep for Leguminous and other Seeds.—The following method for steeping has been found to answer well for tare, rye, or other seeds, it tends to start the young plants into quick, and vigorous growth, upon which, frequently, depends the success of the future crop. Mix in your steeping vessel, equal parts of tank liquid and urine, dissolve or macerate in it a few pounds of pigeons' dung, or the dung of fowls, or guano, well pounded, and an equal quantity of common

* Farmers' Almanack.

September.

Week commencing Monday, September the 25th, 1843.

Sussex.

MONDAY—*Willingdon School.* Boys carrying out liquid manure for tares, and making dung heap. *Eastdean School.* Twelve boys digging up potatoes, gathering the haulm, and clearing the ground. *Piper.* Digging up potatoes. *Dumbrell.* Mowing stubble, thrashing wheat, carrying dung.

TUESDAY—*Willingdon School.* Boys cleaning clover ley for wheat. *Eastdean School.* Boys digging ground for wheat, digging up wheat stubble for rye. *Piper.* Preparing dung mixen. *Dumbrell.* Mowing stubble, digging up oats stubble for rye.

WEDNESDAY—*Willingdon School.* Boys cleaning clover ley for wheat. *Eastdean School.* Carrying the contents of the tanks and privy tubs to the wheat stubble. *Piper.* Preparing dung heap. *Dumbrell.* Mowing stubble, digging.

THURSDAY—*Willingdon School.* Boys cleaning clover ley for wheat. *Eastdean School.* Digging up potatoes, and healing up for winter, picking weeds from the mangel wurzel. *Piper.* Digging potatoes. *Dumbrell.* Winnowing wheat, raking stubble.

FRIDAY—*Willingdon School.* Boys hoeing white turnips sown after oats.* *Eastdean School.* Boys sowing rye for green food, mowing stubble, and manuring. *Piper.* Digging up potatoes. *Dumbrell.* Digging up wheat stubble for rye.

SATURDAY—*Willingdon School.* Boys sowing rye, and dressing the ground. *Eastdean School.* Boys emptying the privy pails, and cleaning the school room. *Piper.* At indoor work, the weather being wet. *Dumbrell.* Digging.

COW-FEEDING.

Willingdon School. Cows living on clover, and white turnips, with chaff.

Dumbrell's. One cow grazed in the day, stall fed morn and even with mangel wurzel leaves. One cow and heifer stall fed with tares till Friday, the remainder of the week staked out on young clover, and fed morn and even with tares.

* *Turnips make Manure.*—Some people will say, “these after or stolen crops of turnips, as above, will be too expensive for a poor farmer;” now when you hear any body say this, just ask him if it will injure a poor farmer to have a good crop and more manure, and then ask him to shew you some better, and cheaper, way of getting manure, than by double cropping your land.—*Piper.*

NOTES AND OBSERVATIONS.

salt, stir well together; put your seed in a wicker basket, and pour the fluid through it several times, letting it drain back into the vessel, for future application. Use gypsum, not quick lime, to divide the seeds, and sow immediately.

"But ill shall he speed
That soweth ill seed."—*Tusser.*

Wheat Sowing Month.—Prepare for wheat sowing. Change your seeds if possible, and bring them "from a poorer, colder soil. Let them be free from smut, and seeds, and weeds." Also remember, that the produce of wheat sown in spring acquires the habit of ripening earlier. If therefore, you now select your wheat for spring sowing, let it be the produce of that which was before sown in spring.

Pickle for Wheat.—There is none perhaps better than this—dissolve common salt in urine, in a good large vessel, till the solution is strong enough to carry an egg upon its surface. Then take a hand basket partly filled with wheat, which plunge beneath the fluid, and stir the wheat for ten minutes, not more; the bad seeds will rise to the top, and may be skimmed off. Withdraw the basket, and let the fluid drain back again into the vessel. Mix the steeped seed with lime to make it part, or what, perhaps would be better, with gypsum, which will not expel the ammonia from the urine. Sow immediately and harrow in, or spread it evenly on a boarded floor, or its vitality may be destroyed.

"Who soweth in rain
Hath weed for his pain."—*Tusser.*

Precautions in Sowing Wheat.—Sow first your clover ley, or rye, or tare stubble ground. Always let your ground be fresh, turn it over in the morning, and sow in the afternoon, but never in wet weather. The above trite remark of the good old poet-farmer will be found generally true. The wheat sowing after potatoes, or turnips will come latest, to allow time for those crops to become matured. But again the advice of Tusser is sound :—

"If weather will suffer, this counsel I give,
Leave off sowing wheat before Hallowmas eve."*

In the north of England this can rarely be accomplished, especially after a late harvest. But let not a moment be lost, in preparing the ground and sowing wheat, not on tare or other stubbles alone, but after your root crops generally.

October.

Week commencing Monday, October the 2nd, 1843.

Sussex.

MONDAY—Willingdon School. Boys hoeing white turnips sown after oats. **Eastdean School.** Fourteen boys digging up potatoes, and clearing ground for wheat. **Piper.** Digging up potatoes. **Dumbrell.** Digging.

TUESDAY—Willingdon School. Boys turning dung and mould heap, to be ready for wheat. **Eastdean School.** Digging up potatoes, healing them for winter, and stone picking. **Piper.** Carrying chalk upon the potatoe ground intended for wheat. **Dumbrell.** Digging.

WEDNESDAY—Willingdon School. Digging stubble for winter tares. **Eastdean School.** Boys emptying the pigatye tank, gathering stones. **Piper.** Carrying chalk as before. **Dumbrell.** Digging.

THURSDAY—Willingdon School. Boys digging for winter tares. **Eastdean School.** Boys digging potatoe ground, and picking up the haulm. **Piper.** Sowing rye. **Dumbrell.** Digging, hoeing turnips, thrashing tares, applied 24 gallons of liquid manure to one rod of ground, for rye.

FRIDAY—Willingdon School. Boys digging for winter tares. **Eastdean School.** Wet weather, boys in the school all day. **Piper.** Digging wheat stubble for tares. **Dumbrell.** Sowing rye, thrashing barley.

SATURDAY—Willingdon School. Boys thrashing barley, the weather being wet. **Eastdean School.** Boys emptying the portable tubs and tank, cleaning styes and school room. **Piper.** The same as before. **Dumbrell.** Winnowing barley, tares, thrashing oate, and harrowing.

COW-FEEDING.

Willingdon School. Cows feeding on white turnips and a little chaff.

Piper's. In the morning a little clean straw while cleaned out, while milking, a gallon of potatoes mixed with chaff, afterwards turnips or tares.

Dumbrell's. One cow stall fed with Italian rye grass, and white turnips till Tuesday night, afterwards with Italian rye grass and lucerne. One cow and heifer staked out on the young clover, and fed morn and even with tares, potatoes, and wheat chaff till Friday night. On Saturday, stall fed with turnips, potatoes, carrots, and barley chaff.

NOTES AND OBSERVATIONS.

"Who trieth to make no improvement, no improvement shall make."—*Old Proverb.*

Drilling Wheat.—" Drill all you can, for there are few soils where the drill cannot be easily employed."—*Farmer's Almanack.** There are two modes of drilling, the first by using a hand drill, like John Dumbrell, which opens the drill, and puts the seed in at the same time, and like him you may invent, and make such a drill, for your ensuing winter evenings' amusement. The second mode is to open the drills with a hoe, at six inches distance from each other, and two and a-half inches deep, while a boy comes after and drops the seed, walking in the drill line in going back, after which a harrow is drawn over it at night. About five or six bushels of mouldy manure per rod, is put upon the seed. To estimate manure by the bushel, if it raise a smile, may remind us of China, where they know its value, and sell it by the pint.

Dibbling Wheat.—" Dibble, also, all you can, it employs poor neighbours, and their children, and it is believed that the saving in seed, is nearly equal to the additional expense."—*Farmer's Almanack.* It is becoming common to do so, even on large farms; the present practice is to place the seeds at a distance of six inches every way from each other, and two or two and a-half inches in depth. They tiller amazingly, and the ears and grain acquire greater bulk. It has been calculated that an imperial bushel of new red wheat, which weighed 63lbs., contained 635,448 grains, a number sufficient to plant on this principle, 28a. 1r. 1p. of land, being after the rate of one peck and nine-sixteenths of a pint per acre.—*Farmer's Magazine.*

"A cock, at labour on the dunghill, found a precious jewel. 'Ah!' says he, 'of less use will thou be to me than so much dung; for it helps to produce the food which keeps me alive, while thou art fit only to be gazed upon.'—*Fable.*

Composting Manure.—In every moment of leisure attend to your mixens, compost mould and dung together in the mixens; some one may say, "Where is the mould to be procured?" While you may reply, "Every one that has *land* is not without *mould* of some sort or other." Then again it may be said, "Where are we to get dung?" And your answer at once may be, "By growing plenty of food for cattle."

It may be said that there is an immense deal of trouble with these dung mixens; it is very true, but we can get nothing in this world without trouble; the *real* question is this, not whether you have great trouble from it, but whether it will *pay* you for your trouble?

Be not afraid of getting too much manure, and if you neglect the chief object, your's will be a failure, while with plenty of manure, you can double crop and double your stock.

* Always have at your fire side the *Farmers' Almanack*, edited by C. W. Johnson, Esq. F. R. S., and Wm. Shaw, Esq., which, at the expense of a Christmas shilling, may be the means of putting many pounds into your pocket.

October.

Week commencing Monday, October the 9th, 1843.

Sussex.

MONDAY—*Willingdon School.* Boys digging for winter tares. *Eastdean School.* Sixteen boys digging up, and gathering potatoes. *Piper.* Turning dung heap, and emptying tank. *Dumbrell.* Thrashing oats, sowing rye and tares.

TUESDAY—*Willingdon School.* Boys thrashing two bushels of wheat, to go to Yorkshire for seed. *Eastdean School.* Boys digging, &c., for rye. *Piper.* Chalking the potatoe ground for wheat. *Dumbrell.* Harrowing, digging, thrashing oats.

WEDNESDAY—*Willingdon School.* Wet weather, tying up straw in the barn. *Eastdean School.* Boys digging up stubble, manuring, and sowing winter tares. *Piper.* Sowing rye. *Dumbrell.* Thrashing oats, trussing straw.

THURSDAY—*Willingdon School.* Boys digging for winter tares. *Eastdean School.* Emptying tank and piggery, gathering potato haulm. *Piper.* Digging wheat ground for tares, is very particule in taking out weeds. *Dumbrell.* Thrashing oats, trussing straw.

FRIDAY—*Willingdon School.* Boys digging for winter tares. *Eastdean School.* Boys carrying manure for wheat, picking out weeds. *Piper.* Sowing tares by hand in the drills. *Dumbrell.* Thrashing oats, digging.

SATURDAY—*Willingdon School.* Boys sowing winter tares. *Eastdean School.* Boys emptying portable pails, cowhouse tank, school cleaning. *Piper.* Sowing tares. *Dumbrell.* Winnowing oats.

COW-FEEDING.

Willingdon School. Cows feeding on white turnips, clover, and a little chaff.

Piper's. Feeding as before.

Dumbrell's. One cow stall fed till Tuesday, with Italian rye grass, and cabbage. On Wednesday, with mangel wurzel leaves, turnips, and oat chaff. Thursday, potatoes, turnips, mangel wurzel leaves, green rye, oat chaff. Friday and Saturday, with Italian rye grass, oat chaff. One cow and heifer, on Monday, stall fed on white turnips and tares. Tuesday, staked out on the young clover, and fed morn and even with carrots, tares, and straw. Wednesday, stall fed on potatoes, turnips, carrots, and oat chaff. Thursday, staked out in clover, stall fed with turnips, carrots, tares, oat chaff. Friday and Saturday the same.

NOTES AND OBSERVATIONS.

"Nature yields but the matter,—man the forms,
Which makes the world a manifold returne."—*Lord Brooke.*

Method of Composting.—Spread equally, and cover the whole of each mixen floor, with a layer of cow dung, horse litter, &c., to the thickness of eight or ten inches, and keep the long straw nearest the floor. Then for every cart load of fresh dung, take 10 or 12 lbs. of gypsum pounded from the rock, which will cost you from 2s. 6d. to 3s. per cwt., sprinkle it over the surface of the layer of dung. Bring in a load of mould from headlands, decaying roots, scouring of ditches, road scrapings, stubble, saw dust, nothing can come amiss, and leaving it on the composting yard pavement, the cart may pass through the cow-lodge without the trouble of turning round. Let the rubbish, so left, be handed to either mixen, and spread over the surface, and when you can obtain a load or two more at intervals, you may spread it upon the other. In this state let it remain, until you have a fresh supply of dung under the manure doors, then fork the first layer well over, and proceed just as before, careful neither to omit the gypsum, nor mould, in forming your second layer.

Previous to forming a new one, always fork over the last layer, and after a few repetitions, pump and diffuse over the whole surface as much tank liquid as will completely saturate the manure heap, and any excess will fall back again into the tank; and this repeat, from time to time, when it may be deemed necessary to do so. With plenty of cattle in the byres, and plenty of space in the yard, you may thus create an enormous bulk of manure, rich, and well mixed.

"These do these elements become his servants and his treasure."—*Lord Brooke.*

Removing.—When properly decomposed, remove it, by bringing your empty cart through the cow-lodge thoroughfare, slicing off the sides of the mixen nearest the path-way, use a plank and barrow for the remote parts of the yard, and pass through the entrance door of the composting yard, with the laden cart, away into the fields.

Further means of enriching the Mixen.—Your pigs must be continually supplied with fresh mould; they will tread it and make it into the richest compost; it may then be handed over to, and compounded into the mixen. The night-soil compost, hereafter described, may be also used in the same manner.

Potatoe Getting.—When you dig up your potatoes, do not neglect to dig the space between the rows, by doing which your ground will be quite clean and ready for dibbling, the wheat as you proceed with the potatoe getting, as follows:—

Drilling, &c. Wheat after Potatoes.—Clear away two or three rows of potatoes at once, draw your drills as before directed, and sow or dibble the wheat as you proceed, on the latter plan; let your seeds be placed six inches asunder, two and a half or three inches deep, cover up and tread them in well.

October.

Week commencing Monday, October the 16th, 1843.

Sussex.

MONDAY—*Willingdon School.* Boys digging for wheat, carrying manure. *Eastdean School.* Seventeen boys digging up potatoes, gathering stones, and gathering haulm for the pigstyes. *Piper.* Mowing tares, and rye, digging up potatoes, turning over, and mixing tank liquid with the dung.* *Dumbrell.* Digging.

TUESDAY—*Willingdon School.* Boys digging, master and one boy drilling wheat. *Eastdean School.* Boys sowing tares, digging up potatoes, and storing them. *Piper.* Digging up and storing carrots, sowing rye as we remove them. *Dumbrell.* Digging.

WEDNESDAY—*Willingdon School.* Boys digging for wheat, and sowing. *Eastdean School.* Boys emptying pigsty tank, and applying its contents to the wheat. *Piper.* Sowing rye, till showery weather prevented us. *Dumbrell.* Digging, and carrying dung with heifer.

THURSDAY—*Willingdon School.* Boys digging for wheat, and sowing. *Eastdean School.* Boys digging for tares, picking mangel wurzel leaves for the cows. *Piper.* Sowing wheat. *Dumbrell.* Digging and drilling tares, carrying dung, and liquid manure, to the rye grass; 84 gallons to $\frac{2}{3}$ rods, or $75\frac{1}{2}$ square yards.

FRIDAY—*Willingdon School.* Boys digging, and sowing wheat. *Eastdean School.* Boys emptying privy pails, cleaning school room, and cow shed. *Piper.* Sowing wheat, carrying manure with the cow. *Dumbrell.* Digging, drilling tares, &c.

SATURDAY—*Willingdon School.* Boys digging for wheat, and sowing. *Eastdean School.* Boys digging for wheat, and picking stones, and haulm, and drawing manure. *Piper.* The same as yesterday. *Dumbrell.* Digging.

COW-FEEDING.

Willingdon School. Cows feeding on white turnips, clover, and chaff.

Dumbrell's. One cow fed part of the week in the stall, with mangel wurzel leaves, carrots, and oat chaff with turnips, occasionally with a few potatoes, and staked out in the wheat stubble one day. One cow and heifer staked out on wheat stubble four days, and fed morn and even with carrots, and oat chaff, entirely stall fed two days, on the same materials.

* *Compost Heap.*—At this time *Piper* has about 50 cart loads of composted manure, (pretty well for a five acre farm,) the fruits of his care and industry. He will empty upon it about 200 gallons of tank liquid two or three times before it is used.

NOTES AND OBSERVATIONS.

"I wisdom dwell with prudence, and find out knowledge of witty inventions."—*Prov. viii. 12.*

Sowing Wheat Broadcast after Potatoes.—Sir WILLIAM PULTENAY described, long ago, the cultivation of a little farm near Shrewsbury, of one acre and one-sixteenth, and cropped, with great success for many years, with potatoes and wheat alternately; his description of the sowing of wheat, adopted by the cottager and his wife, is as follows:—"In October, when the potatoes are ripe, she rakes off all the stalks, or haulm of the potatoe, which she secures, to produce manure, by means of her pig. She then goes over the whole with a rake, and takes off all weeds, and before taking up the potatoes, she sows her wheat, on as much ground as she can clear of potatoes that day. They are taken up with a three-pronged fork, in which her husband assists, and by the same operation, the wheat is covered deep. She leaves it quite rough, and the winter frost mellows the earth, and by the earth falling down, it adds much strength and vigour to the wheat plants in the spring. Her crops of wheat have been, of late years, always good, and even the present year, which in this country has not been favourable to the wheat crop, she has thrashed out fifteen Winchester bushels from thirty-four rods of land."—See '*Cottage, Farmers' Assistant*', by C. W. Johnson, F.R.S., &c.

Their joy will be, continually, in the success of their labours; their thoughts shall be turned away from what is evil, to that which is good.

Potatoes and Wheat in succession.—“On Sir G. CAYLEY's allotments, it is usual to have one half in wheat, the other half in potatoes, changing the crops every year, the part, in wheat of one year, being cropped the year following with potatoes, and *vice versa*. On this short rotation the land has not diminished, but actually increased in fertility. For the last ten years, the produce of wheat has been 40 bushels to the acre, in some cases 54, while for the twenty years preceding, 36 bushels was the average. The half acre of potatoes, and others supplied by the garden, are usually consumed by the pigs. Cottagers have been known to sell twenty pounds worth of pigs, besides their families being well supplied with bacon!! And some cottagers, who have the happy fortune to be blessed with careful wives, and good cows, have sent 12lbs. of butter to market per week, during the flush of the feed.”

“He that tilleth his land, shall have plenty of bread.”

Another instance of a quick succession of crops is that of S. BRIDGE, of Stock Green, near Feckenham, Worcestershire. He cultivates four acres of poor land entirely by the spade. His crops for the most part are successively wheat and potatoes. This he has followed with great success for 24 years. As soon as the wheat is

October.

Week commencing Monday, October the 23rd, 1843.

Sussex.

MONDAY—*Willingdon School.* Boys digging for wheat, and the master drilling. *Eastdean School.* Seventeen boys digging up potatoes, gathering up haulm, and stones. *Piper.* Sowing wheat, in drills six inches apart, and two or three deep. *Dumbrell.* Digging up potatoes, and carrying manure.

TUESDAY—*Willingdon School.* Boys carrying out manure. *Eastdean School.* Boys digging for wheat, and clearing off swede turnips. *Piper.* Sowing wheat in drills. *Dumbrell.* Digging up potatoes, heifer drawing dung.

WEDNESDAY—*Willingdon School.* Boys digging for wheat. *Eastdean School.* Boys emptying the pigsty tank, digging for, and sowing wheat. *Piper.* Sowing wheat. *Dumbrell.* Digging, mixing dung and mould, heifer carrying dung.

THURSDAY—*Willingdon School.* Boys digging, and drilling wheat. *Eastdean School.* Boys drawing manure for wheat, cleaning pigstyes. *Piper.* The same as yesterday. *Dumbrell.* Drilling fourteen rods of tares,* storing in the cellar mangel wurzel roots.

FRIDAY—*Willingdon School.* Boys digging for wheat. *Eastdean School.* Boys sowing tares, digging for wheat, gathering mangel wurzel leaves, and stones. *Piper.* As before. *Dumbrell.* Digging up carrots, potatoes, heifer dung carrying.

SATURDAY—*Willingdon School.* Boys digging for, and drilling wheat. *Eastdean School.* Boys emptying portable pails, cleaning the school, planting cabbages. *Piper.* As before. *Dumbrell.* Mixing dung and mould, pulling mangel wurzel roots.

COW-FEEDING.

Willingdon School. Cows feeding on white turnips, &c. as before.

Piper's. In addition to other food, is giving two gallons of carrots per day.

Dumbrell's. One cow staked in the rye grass, and fed in the stall morn and even, on mangel wurzel leaves, for four days. Stall fed with mangel wurzel leaves, turnips, and oat chaff, for two days. One cow and heifer staked on clover, and morn and even fed with potatoes, carrots, and oat chaff, for three days, the remaining three, stall-fed with turnips, potatoes, and oat chaff.

* *Tares.*—Now drill your second crop in by hand, with a wheat hoe, and scatter a little manure in every drill.

NOTES AND OBSERVATIONS.

off, he breast-ploughs his stubble ground, raking up the stubble to litter the pigs. He then digs it over with a fork, and plants on it potatoes in the following spring; this crop being kept clean, the land needs no further preparation for wheat. His average produce has been 40 bushels of wheat per acre, and twelve tons of potatoes per acre. The source of manure is the pigs which he keeps upon a part of the produce; the potato haulm, stubble, and straw, are of course, carefully husbanded for this purpose.

"O what pleasure, to the intelligent,
It is to know, and have perseverance."—Hawes.

Lime.—In all soils there ought to be a proper quantity of lime—there may be so much, that more will do no good—there may be far too little, and it is a nice point in husbandry, exactly to adjust the quantity of it to the wants of the several crops. It appears to act as a kind of flux to certain earthy substances, and to fit them to become, along with itself, a part of the structure of plants. A proper supply of it, therefore, ought to be kept up in the soil; the best mode of doing which, perhaps, is by using it, in small quantities and frequently, as a compost. No rubbish about the farm can come a miss to form with it such compost, peat earth, poor mould, scouring of ditches, will all be found of value. Such a dressing may be requisite for your wheat crop, to increase the strength of its straw, and to keep the plants erect. It is usual to apply it previous to the sowing, and to work it well into the ground, but if used in the caustic or quick state, never let it come near to manure, particularly the fluid manure of the farm yard.

"A very limited spot of garden ground, if well managed, not only adds greatly to the domestic comforts of a working man, but is actually a means of improving his moral character, by giving him employment in his leisure hours, in an amusing and profitable occupation, and in a spot which he can truly, and with pride, call his own."

Small Farms.—It appears from the experience of the Eastbourne tenants, that a farm of four acres, will be as profitable to an industrious tenant, cultivated on the Belgian plan, as one of seven farmed under the old system. Ten acres appear to be more than one man can well cultivate with the spade, and lately ten acre farms there, have been reduced to five, in order that by concentrating the labours of the tenant, he might do better, and the change has been found advantageous to him. It has been said, then, by an excellent person, and well may it be said, "that he who leaves his land uncultivated, so that it does not produce one half of what it ought to do, may not unaptly be compared to the dog in the manger, who will neither profit by his situation himself, nor let another do so." Such persons, with perfect justice, may be addressed like the unprofitable tree in the parable, " Why eumber ye the ground."

October.

Week commencing Monday, October the 30th, 1843.

Sussex.

MONDAY—*Willingdon School.* Wet weather, boys in school all day. *Eastdean School.* Wet, boys cleaning up the cellar, assorting potatoes.* *Piper.* Sowing wheat. *Dumbrell.* Wet weather, digging up a few potatoes.

TUESDAY—*Willingdon School.* Wet weather, boys in school all day. *Eastdean School.* Wet day, boys in the afternoon plaiting straw, to make themselves hats. *Piper.* Thrashing barley. *Dumbrell.* Digging up carrots, hoeing mangel wurzel.

WEDNESDAY—*Willingdon School.* Boys digging for wheat. *Eastdean School.* Boys digging for wheat, emptying pigsty tank, picking stones, and haulm. *Piper.* Thrashing barley. *Dumbrell.* Digging up carrots, storing mangel wurzel.

THURSDAY—*Willingdon School.* Boys digging for wheat. *Eastdean School.* Boys digging up, and storing potatoes, drawing drills, sowing wheat, and treading the ground. *Piper.* The same as yesterday. *Dumbrell.* Digging up carrots and potatoes.

FRIDAY—*Willingdon School.* Boys digging for wheat. *Eastdean School.* Boys pulling, and storing swede turnips, and gathering up weeds. *Piper.* The same as before. *Dumbrell.* Digging up carrots, and potatoes, heifer carrying dung and potatoes.

SATURDAY—*Willingdon School.* Boys carrying solid and liquid manure to the wheat. *Eastdean School.* Boys emptying portable pails, cleaning school room, and pigstyes, and getting Sunday food for the cows. *Piper.* Winnowing barley. *Dumbrell.* Digging carrots, and turnips, topping them, heifer carrying dung.

COW-FEEDING.

Willingdon School. Cows feeding on white turnips, with a little barley straw.

Dumbrell's. One cow fed three days with turnips, potatoes, and straw, varied in the other three, by giving cabbage, or chaff. One cow and heifer fed with turnips, carrot tops, and straw, occasionally omitting the carrot tops, and giving potatoes.

Remark.—From this time until May-day, all your cattle must be fed in the house, or straw yard, upon good food, and plenty of it, such as turnips, carrots, mangel wurzel, and a little clean straw. Reserve your hay, if you have any, for the calving time.

* *Assorting Potatoes.*—Assort your potatoes very carefully—put the best aside for family use—the second select about the size of a large pullet's egg for sets, which place down whole—the small and broken ones select for the pigs.

NOTES AND OBSERVATIONS.

" Besides, this world just needeth such a wight,
 Who may thereof distinguish ev'ry part;
 Make use thereof, and take therein delight,
 And order things with industry and art.—*Davies.*

Arguments in favour of Spade Husbandry.—Spade husbandry is not a system of expense or risk. Less capital is necessary for it than ordinary husbandry. No gardener would think of planting potatoes, carrots, or cabbages in ploughed land, if he could get it dug; for the difference of produce far more than compensates for the difference of expense. By turning up or loosening the ground five or six inches deeper than the plough, which does not ordinarily act on more than three or four inches of soil, there is an opportunity afforded for the descent and diffusion of the roots of plants. If this plan were carried into effect to a moderate extent only, the demand for labour would be augmented at places where it is exuberant; while in case of an insufficiency of hands, the plough would still be used, and the necessity would thus be avoided of sending work-people abroad.—*Dr. Yelloly.*

Every small farmer ought to use the spade, for many reasons. It costs but little more, even if he had to hire assistance, and does the business better. In all drill crops, also, by using the spade, he may put in a quicker succession of crops, and have one coming forwards as the other is ripening. In wet seasons, he can dig when he cannot plough; and its value, in turning up stiff clay land in autumn, and exposing the soil to the frost and snow, is scarcely to be imagined; and in all such lands *this plan* should be pursued where no winter crop is put in.

"If the true value of the labourer were really understood, he would have many competent masters willing to take him, where that value would be brought out, and turned to better account."

Mixed system of Spade and Plough.—In this respect I am quite decided in opinion, that the entire use of manual labour is in small farms much more beneficial than the *entire* cultivation by horse-work; but a mixed system, where a horse can be got in due season, I should prefer to either; but in *this* lies the difficulty; for it should be remembered, that very often the small occupiers who are obliged to hire horses, are, forced to wait, in order to get their labour performed in that way, until the proper period for doing the work has passed over, to the evident injury of their crops. Whereas, if they had relied upon the spade, which they had at their own command, however slow the work might have appeared to them, it would have been performed in due season, so that they might have reaped the fruit of their industry. It possesses the additional advantage of employing the poor man, at a season, when it is difficult to get employment elsewhere.—See *Mr. Blacker's Prize Essay.*

November.

Week commencing Monday, November the 6th, 1843.

Sussex.

MONDAY—*Willingdon School.* Boys digging for wheat. *Eastdean School.* Sixteen boys, weather being wet, were plaiting straw, for making hats, and thrashing wheat over a barrel. *Piper.* Digging up potatoes. *Dumbrell.* Rainy day, no report.

TUESDAY—*Willingdon School.* Wet day, boys in school. *Eastdean School.* Wet day, plaiting for hats, thrashing wheat, or in school. *Piper.* No report. *Dumbrell.* Wet, digging a few potatoes.

WEDNESDAY—*Willingdon School.* Boys digging for wheat. *Eastdean School.* Boys digging for, and sowing wheat, or pulling carrots, one of them 6lbs. in weight. *Piper.* No report. *Dumbrell.* Digging up carrots, and potatoes.

THURSDAY—*Willingdon School.* Boys carrying out manure for wheat. *Eastdean School.* Boys emptying tank, pulling carrots, and storing them. *Piper.* Spreading dung on his grass land. *Dumbrell.* Digging up carrots, and potatoes, heifer carrying dung, and potatoes.

FRIDAY—*Willingdon School.* Boys carrying out manure for wheat. *Eastdean School.* Boys drawing manure for wheat, digging, sowing wheat, and picking stones. *Piper.* Pulling carrots, turnips, and mangel wurzel, and storing them. *Dumbrell.* Rainy day, no report.

SATURDAY—*Willingdon School.* Boys digging for wheat. *Eastdean School.* Taking in a wheat rick, emptying portable pails, pigstyes, and cleaning school. *Piper.* Raking, and clearing away leaves, and all kind of rubbish near the house. *Dumbrell.* Burying potatoes, drilling wheat,* heifer carrying dung, and potatoes.

COW-FEEDING.

Willingdon School. Cows fed on white turnips, and chaff.

Dumbrell's. One cow fed with carrot tops and straw for one day; with turnips, mangel wurzel, and straw for two days; with turnips, carrot tops, and straw for four days. Cow and heifer fed all the week on turnips, carrot tops, and straw.

* *Wheat Drilling.*—On light land, drill your wheat about three inches deep, the seed being well under the surface, is less the prey of birds, and less in danger from the frost, and by rooting more and deeper before it rises above the surface, the spike obtain greater nourishment for the ears, the corn is more plump, and the stems resist the wind and weather better, and stand more erect; on wet, stiff soil, however, it is not requisite to put it in more than one and a half or two inches deep.

NOTES AND OBSERVATIONS.

"It is the fault of the times, for proprietors to identify their interest with the land, rather than with the population upon it."

I am fully sensible of the full value of the plough and harrow—and should fully sanction the small farmer in availing himself of such valuable assistance, but it must be acknowledged, that on a small scale, every thing they can accomplish may be attained without them, by manual labour and industry. The cost is not much more, even if the small farmers have to hire assistance. In drill crops, the spade, the hoe, and the scuffle can be used in wet seasons, when the plough cannot, and a succession of drill crops may be obtained by the use of the spade, such as would be wholly impossible by the use of the plough, which all gardening proves, and this is what cottage farming ought to aspire to.—*Ibid.*

"The strongest things are not so well established, as to be out of danger from the weakest."—*Quint. Curt.*

Of all Questions—this the greatest.—The proprietors of land, who, in point of fact, are the real payers of rates, though in an indirect manner, are far more deeply interested in finding work for the able bodied labourer, than any other class of persons. A time may come, when, by an increase of pauperism, the whole of the rental may be required to furnish the rates alone. Instances of this kind, unfortunately, have not been already wanting, and therefore, this is peculiarly a landlord's question. If it may be said that such employment cannot be found in this country, it may be asked—where is the farm which is not improvable—by draining—by better tillage, or weeding? "Until our population equal that of China, there is no fear but the land of England, which is equal in quality to that of China, will supply both work and food;" and when such is the case, we may then inquire—how our neighbours in the Netherlands support themselves, besides finding cheese, &c. for us? the population there being greater, in the same space, than that of China. Is it not by stall-feeding, and by their superior modes of raising green food for cattle? which calls into activity, both very young children and aged persons, who all perform their part towards raising food for the whole. The manual operations of dibbling, and continual weeding, tending greatly to the saving of seed, and greatly to increase the productiveness of their land.

"Prepare thy work without, and make it fit for thyself in the field."
—Prov. xxiv. 27.

Homestead rubbish.—Now gather up every kind of rubbish, potatoe haulm, &c. and throw it to your pigs, let it be well tramped by them, and in it this state spread it upon your grass, where it may remain till March, then clear off the stalks, and all that is left of the dung, for your compost heap; you will be abundantly rewarded for the trouble.

November.

Week commencing Monday, November the 13th, 1843.

Sussex.

MONDAY—*Willingdon School*. Boys sowing wheat. *Eastdean School*. Sixteen boys digging for wheat, sowing wheat, and pulling carrots. *Piper*. Finished potatoe getting; had 300 bushels from $\frac{1}{2}$ of an acre. *Dumbrell*. Drilling wheat, carrying potatoes, and turnips with the heifer.

TUESDAY—*Willingdon School*. Boys digging up potatoes. *Eastdean School*. Boys digging up mangel wurzel, topping it for the cow, gathering stones. *Piper*. Sowing wheat, and carrying manure to potatoe ground, intended for wheat. *Dumbrell*. Clearing turnip ground, digging up potatoes, burying carrots,

WEDNESDAY—*Willingdon School*. Boys digging up potatoes. *Eastdean School*. Boys emptying tank, drawing manure for, and sowing wheat. *Piper*. Sowing wheat. *Dumbrell*. Digging up carrots, potatoes, and burying carrots.

THURSDAY—*Willingdon School*. Boys digging up potatoes. *Eastdean School*. Boys digging for wheat crop, sowing tares, and treading wheat. *Piper*. Spreading dung. *Dumbrell*. Digging up potatoes, heifer carrying them, and dung.

FRIDAY—*Willingdon School*. Digging up potatoes. *Eastdean School*. Bringing potatoes home, and gathering the haulm. *Piper*. Spreading dung. *Dumbrell*. Digging up potatoes, manuring with the heifer.

SATURDAY—*Willingdon School*. Boys carrying manure to the potatoe ground, intended for wheat. *Eastdean School*. Boys cleaning school room, tank, &c. &c. *Piper*. Finished wheat sowing. *Dumbrell*. Digging, and manuring with the heifer.

Yorkshire.

Operations during the Week.

Slathwaite School. Boys, under *C. Hoyle*, &c., digging, spreading ashes, sowing rye, and tares, harrowing, and gathering stones. *John Bamford* digging; *James Bamford* digging up oat stubble.

COW-FEEDING.

Willingdon School. Cows fed on white turnips, and chaff.

Piper's. On swede turnips, and straw.

Dumbrell's. One cow fed in the stall, with turnips, mangel wurzel, and straw the whole week. One cow and heifer fed in the stall for four days, with carrot tops, and straw; for two days, with turnips, carrot tops, and straw.

Small Model Farms, and an Industrial School Farm, having been established at Sleighthwaite, under the auspices of the Earl of Dartmouth, the reports from them will occasionally follow. These evidently prove, that the mode of conveying agricultural information from distant places, adopted by F. Thynne, Esq., his lordship's agent, has been quite effectual. Preparations are now making to build another Industrial School, in the upper part of the Chapelry, where land has been given by the noble lord for the site, and also for a Farm of Industry; the design being warmly supported by the Council of Education. These important and humane improvements are under the unceasing, the untiring care of the Rev. C. A. Hulbert, and an intelligent committee. The union of the labours of the loom and the spade in a district teeming with population will, thus, be promoted. By the curious reader, the consecutive operations in these reports will be viewed with interest, as enabling him to compare the climate, and agricultural value, of the South, with the North of England.

NOTES AND OBSERVATIONS.

"Every act that tends to neatness, round a dwelling, tends to the creation of a mass of manure; and you seldom see a cottage, with a plot of ground of a quarter of an acre belonging to it, where a large heap of manure may not be collected."—*Anon.*

Neatness within and without.—In Flanders, the neatness that prevails within and without the farm houses is quite fascinating. Creepers, or fruit trees, are trained against the walls of the houses. Every article of furniture is polished; the service of pewter displays peculiar brightness; and the floor is purified with frequent washings. The cottager's house is comfortable, and peculiarly clean. Industry and frugality are the characteristics of the Flemish farmer, he looks not beyond the enjoyment of moderate comforts; is content with tranquil pleasures, and never being afflicted by poverty, is not anxious to amass wealth. He abstains from spirituous liquors, however easily procured; pays his rent punctually, and has always something for a rainy day.—*Vide Encyclopedia of Agriculture.*

"Penny wise,—pound foolish!"—*Old Saying.*

Part not with your Potatoes.—A celebrated writer, who has done much to infuse in his own clear, forcible, and saxon style, a taste for rural pursuits, says truly relative to the potatoe, in language of remarkable clearness and perspicuity, what I cannot refrain from quoting, "I am far from wishing to detract from the value of potatoes, and the great advantage which arises from their being adapted as the food both of man and beast; but this very circumstance generally occasions their being sold; and thus the farm is

November.

Week commencing Monday, November the 20th, 1843.

Sussex.

MONDAY—*Willingdon School.* Boys digging up white carrots. *East-dean School.* Fourteen boys digging up, cleaning, and topping mangel wurzel, and storing them. *Piper.* Pulling swede turnips. *Dumbrell.* Digging for wheat.

TUESDAY—*Willingdon School.* Boys digging for wheat. *East-dean School.* Boys digging for, and sowing wheat, gathering weeds and stones. *Piper.* Digging barley stubble. *Dumbrell.* Digging for wheat, sowed nine gallons on 60 rods, or 1815 square yards.

WEDNESDAY—*Willingdon School.* Boys digging for wheat. *East-dean School.* Boys emptying the tanks, treading the wheat ground. *Piper.* Wet weather, no report. *Dumbrell.* Digging, picking weeds off the wheat, heifer carrying dung.

THURSDAY—*Willingdon School.* Boys pulling swedes, and digging for wheat. *East-dean School.* Boys thrashing wheat over a barrel, and plaiting straw for hats. *Piper.* It being wet, nothing was done. *Dumbrell.* Digging, heifer carrying dung.

FRIDAY—*Willingdon School.* Wet weather, boys in school all day. *East-dean School.* Boys turning dung and mould, digging for, and sowing wheat, and topping turnips. *Piper.* Wet, digging barley stubble. *Dumbrell.* Digging, drilling wheat, heifer carrying dung, and potatoes.

SATURDAY—*Willingdon School.* Very wet, boys in school all day. *East-dean School.* Wet day, clearing up wheat, and cleaning school. *Piper.* Wet day, no report. *Dumbrell.* Rainy day, no report.

Yorkshire.

Operations during the Week.

Slathmire School. Twenty-one boys harrowing on Wednesday, fifteen occasionally gathering stones, collecting manure, &c. *James Bamford* digging oat stubble.

COW-FEEDING.

Willingdon School. Cows fed on white turnips, and the tops of swede turnips.

Dumbrell's. One cow stall fed for four days, with turnips, mangel wurzel, and straw; and two days with turnips, mangel wurzel, potatoes, and straw. One cow and heifer stall fed with turnips, and straw during the week.

NOTES AND OBSERVATIONS.

robbed of the manure, and the future produce curtailed, for the temporary object of raising perhaps a trifling sum of money, though the farmer might, in the end, have even made more by fattening stock with them, in which respect many prefer them to any other crop. But if a farmer has plenty of turnips and mangel wurzel, he is not tempted to misapply them, and they are therefore applied to the purpose for which they were intended. Again, when they are applied to fattening, and compared with potatoes sold in the market, which is the usual way of disposing of them by small farmers, it must not be forgot that the expense and loss of time in driving a fat cow to market, or fair, is nothing compared to the labour of attending the market with a horse and cart, day after day, to sell a quantity of potatoes."

"The field-garden is the labourer's saving' bank, when there may be no work for the shuttle, there will always be plenty for the spade."

Break up old Pasture or Grass Land.—In the fall of the year is the best time for doing this, to prepare for a crop of potatoes or turnips. Trench down to the sub-soil, if for turnips burn part of the rough turf from it, for the ashes will be beneficial to that crop. If you intend to take a crop of potatoes, which are in general the best crop you can take, trench deeply, and place the turf, well pared off, in the hollows. Let your swede turnip ridges be from 24 to 27 inches, and your potatoe ridges be three feet apart; the frost during winter will greatly assist you, it will mellow the soil and kill the vermin; but in both cases let your ridges stand high and well exposed to the weather.

"Very pleasant it is to see a man at labour in his own field, assisted by his children—they shall be kept apart from the vice and folly of the young men of the city."

Planting of Cabbages.—It is rather late now to plant cabbages, but, this week, Mr. Bamford informs us that he has planted 18 perches of wheat stubble, after digging it, with early York cabbages. His land having a clay sub-soil, from the humidity of the atmosphere, or other causes, would appear well adapted to the growth of succulent plants. The cabbage, in particular, he informs us, appears to thrive with luxuriance; no crop he thinks will answer so well upon the mountains, or produce richer, or better flavoured milk or butter. Last May (1842) he planted 15 perches of land with scotch cabbages, and although he has had better, the crop has afforded good food for one cow during four weeks, and one-half of them remains to be consumed. He thinks the milk equal, in richness, to that derived from the pasture fields in the spring of the year. He plants his early Yorks, so that each may occupy its square yard of space, leaving thus, sufficient room for intruding as many rows of scotch cabbages,

November.

Week commencing Monday, November the 27th, 1843.

Sussex.

MONDAY—*Willingdon School*. Boys digging for wheat, after swede turnips. *Eastdean School*. Seventeen boys digging and topping mangel wurzel, and carrying the tops and the gathered weeds to the pigs. *Piper*. Pulling swede turnips. *Dumbrell*. Drilling wheat, carrying dung and potatoes with the heifer, one load of each a mile.

TUESDAY—*Willingdon School*. Boys digging as before. *Eastdean School*. Boys digging mangel wurzel ground, sowing it with tares for seed, hoeing cabbages, and picking stones. *Piper*. Digging ground where the swedes grew, for exposure to air and frost. *Dumbrell*. Drilling wheat, heifer carrying dung and potatoes, each a mile.

WEDNESDAY—*Willingdon School*. Boys digging for wheat, after swedes. *Eastdean School*. Boys digging up potatoes, picking haulm, emptying tanks, and cleaning pigtyle. *Piper*. Pulling mangel wurzel. *Dumbrell*. Drilling wheat, heifer carrying dung.

THURSDAY—*Willingdon School*. Digging for wheat, after swedes. *Eastdean School*. Boys getting swede turnips, digging for, and sowing wheat, and treading it. *Piper*. Spreading manure. *Dumbrell*. Drilling wheat, collecting street scrapings, applied 100 gallons of tank liquid to 4 rods of Italian rye grass.

FRIDAY—*Willingdon School*. Boys pulling swedes. *Eastdean School*. Boys digging wheat stubble, gathering stubble, treading new sown wheat, and planting cabbages. *Piper*. Spreading manure. *Dumbrell*. Drilling wheat, heifer carrying dung.

SATURDAY—*Willingdon School*. Boys sowing wheat. *Eastdean School*. Boys emptying privy palls and tank, cleaning school, and getting cow fodder for Sunday. *Piper*. Cleaning out the piggery. *Dumbrell*. Drilling wheat, heifer carried 18 loads of dung out applied 98 gallons of liquid to 2 rods of rye.

Yorkshire.

Operations during the Week.

Slaitwaits School. No report. *John Bamford* getting swede turnips, storing them, and thrashing spring wheat, and oats.

COW-FEEDING.

Willingdon School. Cows fed on swede turnip tops, and straw. *Dumbrell's*. One cow stall fed during the week, on turnips, potatoes, mangel wurzel, and straw. One cow stall fed during the week, on turnips, and straw.

NOTES AND OBSERVATIONS.

about next May, as there are, now, rows of early Yorks; so that by the time the Yorks come to maturity and require removing, the scotch may have space left for their future progress.

"Useful pursuits like these nourish youth; delight old age; are the ornaments of prosperity, the refuge and solacement of adversity."—*Tully.*

Cabbage and Italian rye grass compared.—I have been favoured with some remarks on this subject by Mr. Thornton, who, at Paddock, near Huddersfield, is trying the interesting experiment,—how to find support for the largest number of cows upon the smallest space of ground. He has in cultivation a minute Example Farm, under his own inspection, and bids fair, I think, to prove that three large cows may be maintained upon less than two acres of land. In reference to cabbage, he observes as follows,—“I find that, according to the extent of ground, it will yield more food than any thing I have yet had grown. My cabbages are called *Early Hope*, are of quick growth, sweet, and will, if well manured, weigh eight or nine pounds each on the average. Cabbage is inferior to Italian rye grass as to producing quantity and quality of milk. In fact, I have found nothing equal to the latter, so far as milk is the object, nay, it exceeds the old natural grasses, whether given in the green state, or as hay. I have tested them both, many times, and find that, either given as hay or as green food, the Italian rye grass causes a yield of two quarts more milk per day in a fresh calved cow. At each cutting of the grass, I apply liquid manure; the solid manure goes to the cabbages, turnips, and potatoes. Three years ago the soil was about five inches deep, now, by applying spade labour, it is much more. The situation is considerably elevated. The soil is composed, mainly, of silicious sand, with a stony subsoil of the same material.”

“Truth, from investigation springs,

And rightly estimating things.”

Climate of Sussex and Yorkshire compared.—Mr. PIGOTT informs us, in a note, that this year's swedes, average 45 cwt., from 17 rods of land, or after the rate of rather more than 21 tons to the acre; and we may presume the plants were raised in the usual mode, not by transplanting. Now Mr. BAMFORD gives us an estimate of his crop, and mode of its production, in a note, as follows, and on the whole it must be considered as encouraging. “I had,” he says, “the rye cut green on a small plot of 10 perches, in June and July, after the ground had been dug, and the weeds forked out, I manured well, and planted it with swede turnips, about the 24th of July, taken from these sown on the 13th of June. I have pulled 11 cwt. which will be after the rate of nearly nine tons per acre, this, I think, by better management, and by more early sowing and planting,

December.

Week commencing Monday, December 4th, 1843.

Sussex.

MONDAY—Willingdon School. Boys pulling swede turnips. *Eastdean School.* Digging up oat stubble, hoeing weeds off, and picking stubble for the compost heap. *Piper.* Digging up wheat stubble. *Dumbrell.* Drilling wheat, harrowing, heifer carrying potatoes.

TUESDAY—Willingdon School. Boys pulling swede turnips. *Eastdean School.* Boys digging up mangel wurzel, bringing tops to the pig, and cows, picking stones. *Piper.* Digging wheat stubble. *Dumbrell.* Digging wheat stubble, spreading dung, heifer carrying it for me.

WEDNESDAY—Willingdon School. Boys digging for wheat, after swede turnips. *Eastdean School.* Boys digging for, and sowing tares, picking stones, and emptying tank. *Piper.* Spreading tank liquid on grass land. *Dumbrell.* Digging, spreading dung, drilling wheat, heifer carrying dung.

THURSDAY—Willingdon School. Boys digging for wheat, after swedes. *Eastdean School.* Wet, boys thrashing wheat over a barrel, and plaiting straw for hats. *Piper.* Digging up stubble. *Dumbrell.* Rainy day, no report.

FRIDAY—Willingdon School. Boys digging for wheat, after swedes. *Eastdean School.* Boys gathering mangel wurzel, and storing roots, picking stones. *Piper.* Digging between lucerne drills. *Dumbrell.* Heifer carried 14 loads of dung, spreading it.

SATURDAY—Willingdon School. Boys sowing wheat. *Eastdean School.* Boys getting turnips for sowing wheat, emptying privy pails, cleaning school, and about the buildings. *Piper.* Digging between lucerne drills. *Dumbrell.* Spreading dung, drilling wheat, and harrowing.

Yorkshire.

Operations during the Week.

Slaithwaite School. No report. *James Bamford* digging up oat stubble. *Christopher Varley* clearing ground for wheat, leading lime for it, spreading, and sowing broadcast; the unfavourable weather prevents the drilling of it. Digging up oat stubble, for tares and turnips next year. *John Bamford* hoeing, manuring, and planting cabbages, finished his early Yorks on Friday. On Saturday, a boy was pricking out Scotch cabbages.

COW-FEEDING.

"Now shepherds to your helpless charge be kind,
Battle the raging year, and fill their pens
With food at will."—*Thomson.*

Willingdon School Cows. Fed on swede turnip tops, and barley straw.

Piper's. Fed on a bushel of swedes, and straw. One cow produces him about 3lbs. of butter a week, and will calve the 20th of next February.

Dumbrell's. One cow stall fed for four days, on turnips, mangel wurzel, and straw; for two days with turnips, mangel wurzel, and straw. One cow and heifer stall fed with turnips, and straw.

NOTES AND OBSERVATIONS.

may perhaps be doubled. The other lot of swedes, (sown in the usual way!) I estimate at twelve tons per acre, a pretty fair return on this high situation." From these remarks we may draw the conclusion, that early sowing on the seed bed, and early transplanting of swedes will be the best mode of carrying out the system of double cropping, upon the mountainous ridge of this county, where the greater humidity of the atmosphere may, probably, be more favourable to the planted swede, than a more southern latitude or dry situation.

"What we believe may be the least beneficial to us, often proves to be the most so."

Hedge Cutting, &c.—Do not hesitate one moment, to engage in the usual occupations of the season, such as draining, cleaning ditches, trimming hedges, draining water-courses, &c., from a fear that the expense will not be repaid; for you may rest assured that, if skilfully managed, there is no portion of the expenditure of a farm, affording a surer prospect of profit.

"These are thy blessings, Industry:—rough power!"

Turnip Topping.—In pulling turnips do not cut the top off too close, and, if any, very little of the root, they will keep all the better. You will soon find the need of heavy stores of swede turnips, some you may stow away in sheds and empty rooms, put the rest in 10 bushel heaps, made in a round form upon the ground, rising up to a point. Lay over them a little straw, or litter of some sort or other, about three inches thick, and then earth upon that to a depth of five or six inches. These heaps may remain till wanted for use, and if, in the spring, you find them sprouting, open the remaining heaps, and expose them to the sun and wind.

December.

Week commencing Monday, December 11th, 1843.

Sussex.

MONDAY—*Willingdon School.* Boys digging for wheat, after swedes.
Eastdean School. Fifteen boys digging oat stubble, treading wheat, or picking stones. *Piper.* Cleaning lucerne, and mending it. *Dumbrell.* Pulling, tipping, and topping turnips.

TUESDAY—*Willingdon School.* Boys carrying manure to the clover ground, for wheat. *Eastdean School.* Boys digging oat stubble, picking weeds, getting, and storing turnips. *Piper.* Cleaning pigs out, and making their manure into a mixen. *Dumbrell.* Drilling wheat, pulling, tipping, and topping turnips, mixing dung and mould.

WEDNESDAY—*Willingdon School.* Boys digging clover ley, for wheat. *Eastdean School.* Boys emptying tank, digging, drawing dung from pigstye and cowsheds. *Piper.* Digging wheat stubble. *Dumbrell.* Pulling, tipping, and topping turnips, drilling wheat, heifer carrying chalk.

THURSDAY—*Willingdon School.* Boys digging clover ley, for wheat. *Eastdean School.* Boys getting mangel wurzel, cleaning and topping it for the cows. *Piper.* Digging up mangel wurzel ground. *Dumbrell.* Pulling, tipping, and topping turnips, heifer carried 23 loads, of six bushels each.

FRIDAY—*Willingdon School.* Boys digging clover ley, for wheat. *Eastdean School.* Boys digging for tares, sowing them, picking weeds, or sorting potatoes for the pigs. *Piper.* Spreading dung on grass land. *Dumbrell.* Drilling wheat, covering potatoe lumps with potatoe haulm, and stubble.

SATURDAY—*Willingdon School.* Digging clover ley, and sowing wheat. *Eastdean School.* Boys cleaning out pigstye, privy pails, cleaning school, and getting cow fodder for to-morrow. *Piper.* Digging wheat stubble. *Dumbrell.* Drilling wheat, manuring it, planting 39 turnips for seed.

Yorkshire.

Operations during the Week.

Slaithwaite School. No report. *Christopher Varley* winnowed 4½ bushels of wheat, the produce of 24 quarts sown, mixing dung and mould, gathering stones, emptying privy. *James Bamford* draining. *John Bamford* draining.

COW-FEEDING.

Willingdon School. Cows fed with white turnips and straw. *Dumbrell's.* One cow stall fed with turnips, mangel wurzel, and straw. One cow and heifer stall fed with turnips and straw.

NOTES AND OBSERVATIONS.

"Agriculture is the nurse of society, and the parent of every art; and the volume of science will not be unfolded to a complete and practical end, until the fields have been made to yield a full and regular supply of food for all our wants."—*Anon.*

Various Labours.—The unsettled weather, you may now expect, will often interrupt your out-door labours, still, there are many things for you to attend to, and whenever the weather will permit, you ought to take advantage of the opportunity. There may be your ditches to clean, your hedges to cut, water-furrowing to look after, or the digging for, and sowing winter wheat may not be completed. The collection of mould, from every possible source, must not be neglected. Your draining may be to attend to, and every day's diligence requisite for the trenching of your old pasture, or other land. Amongst other things, when the weather is moist, you may begin to apply the contents of your tank to the grass intended to be mown, or your small plot of young clover; but never apply it to the fields that have been pastured upon, or tramped over by cattle; the herbage there may have received far more of the precious fluid, in most places, than the plants require. Previous to the application of the liquid to the grass, it may be well to strew over it about 2 cwt. of gypsum per acre, unless the free ammonia of the liquid be already fixed by other chemical agents.

"The total loss, in England, of liquid manure has been estimated at seven millions annually."

Application of Tank liquid to grass.—You do not need to hesitate, at this season, to apply your tank liquid, when fresh, to the grass you intend to mow next year, even if snow is upon the ground, especially if there be a prospect of a fresh fall of snow. By allowing it to ferment while in the tank, a subsfance is gradually formed always tending to fly off, both while it remains there, and after its application to the grass, unless retained by chemical appliances. When once within the ground, the fermentation of the liquid gradually proceeds, and the roots of the plants are ready to appropriate, as food, this volatile substance, ammonia, as fast as it is produced, without, probably, permitting much of it to escape.

"The agricultural value of the liquid manure voided by one cow, in the year, has never been computed, by practical men, at less than forty shillings, yet, in most farms it is allowed to run to waste, and to supply its place, farmers are buying guano at £10 or £12 per ton."

Tank liquid with Gypsum on clover.—In mild, rainy weather, you may venture to stinkle over your small plot of clover, tank liquid diluted with water, and while the herbage is still moist, sow about 2 cwt. of fine-pounded gypsum. A few days afterwards it ought to be well tramped, or rolled with a very heavy roller, so that the coming frost may have less power to heave the young clover plants from the ground. From the observations of the Rev. W. THORPE,

December.

Week commencing Monday, December the 18th, 1843.

Sussex.

MONDAY—*Willingdon School.* Boys digging clover ley, for wheat.
Eastdean School. Boys digging oat stubble, getting and storing turnips, and gathering leaves. *Piper.* Digging up wheat stubble.
Dumbrell. Spreading dung, drilling wheat, and harrowing.

TUESDAY—*Willingdon School.* Boys digging clover ley for wheat.
Eastdean School. Boys getting, topping, and storing mangel wurzel.
Piper. Drawing mould to the mixen. *Dumbrell.* Digging for, and drilling wheat.

WEDNESDAY—*Willingdon School.* Boys digging clover ley, for wheat.
Eastdean School. Boys drawing drills for wheat, to have the liquid put in, picking stones and roots. *Piper.* The same as yesterday. *Dumbrell.* Digging, drilling wheat, harrowing.

THURSDAY—*Willingdon School.* Boys digging clover ley, for wheat.
Eastdean School. Boys digging mangel wurzel ground, treading wheat, gathering and topping turnips. *Piper.* Mixing dung and mould together. *Dumbrell.* Digging, drilling wheat, and harrowing.

FRIDAY—*Willingdon School.* Boys finished wheat sowing. *Eastdean School.* Boys thrashing wheat over a barrel, plating straw for hats, tying the straw in bundles. *Piper.* Mixing dung and mould together. *Dumbrell.* Digging, and drilling wheat.

SATURDAY—*Willingdon School.* Boys cleaning out the tanks. *Eastdean School.* Boys emptying the portable pails, cleaning pigsty, and school room, and getting cow fodder for the morrow. *Piper.* Digging wheat stubble.

Yorkshire.

Operations during the Week.

Slaithwaite School. No report. *C. Varley* digging for spring tares, after oats, and for potatoes. *James Bamford* draining, assisted by four manufacturing workmen and a horse.

COW-FEEDING.

Willingdon School. Cows fed on turnips and barley straw.

Piper's. Admonishes us to give hay on Christmas-day as their plum cake.

Dumbrell's. One cow fed during the week on turnips, mangel wurzel, and straw. One cow and heifer stall fed during the week, with turnips, turnip tops, and straw.

Warmth and Food.—Keep your cows well, and warm, for the better you keep them, the better will they make your land, and the less food they will require.

NOTES AND OBSERVATIONS.

it is very probable that the "clover sickness," in some measure, is owing to the rupturing, and subsequent decomposition of the young plants, by the frosts of winter; and this plan is recommended, in the hope that it may prove, if not a preventative, at least beneficial to the crop.

"Various, but pleasant, are the occupations of the husbandman."

Selecting Turnip Plants for Seed.—Preserve a few of your swedes for seed, pick out the *largest* turnips with the *smallest tops*, and plant them in the latter part of February, where they may be out of the smell of all other flowers.

"Always try to get a penny, and to keep it, in a rainy day."

In-door Employment.—You will often observe a gentleman betake himself to mechanical employments, within doors, of one kind or another. The lathe, the joiner's bench and tools, furnish him with recreation, or amusement, and to you they may yield both pleasure and profit. Learn to use them then, and take a pride in their use; to do so will save you many a shilling, and contribute towards keeping every thing about your place nice and tidy. When a shower sends you home, resume your carpentry, unless you have better employment; and even if you have, an occasional five minutes spent at the carpenter's bench will be a pleasant relaxation. Try to make your own tank barrel, as well as to construct a covered shed, open at the side, under which to make your composts, and where they may dry spontaneously; they will soon be wanted for future top-dressings.

"It is stated by M. SPARNGEL, that one cow furnishes in the year 50,000 pounds of urine, and that 500 pounds of sal ammoniac could be manufactured from such a quantity, the retail value of which, in England, would be £25."

Belgian Tank Barrel.—The Belgian tank barrel is mounted upon three wheels, two at the sides, one before, and so arranged that the three wheels may pass down three furrows. They may be formed of wood alone, or hooped with an iron tire, four and a-half inches broad. The barrel is so connected with the shafts and axle, that it may be tilted up a few inches. A hole is bored, perpendicularly, through both sides of the barrel, and close to the hinder end of it, so that a long stick may pass through the barrel, from the upper hole, and one extremity be made to act as a plug to the inferior hole. A splash board, about a foot square, is placed at a distance of about a foot, immediately under the hole. The attendant pulls up this long plug, or replaces it in the hole when requisite. The fluid then issuing through the aperture, on its striking the board, is made to rebound on all sides, to a distance of five or six feet, and as the quantity of the effluent fluid diminishes, the barrel

December.

Week commencing Monday, December the 25th, 1843.

Sussex.

MONDAY—*Willingdon School.* Boys holyday during the week.
Eastdean School. Boys holyday during the week. *Piper.*
 Christmas day, holyday. *Dumbrell.* Christmas day, holyday.

TUESDAY—*Piper.* Holyday. Measured the potatoes which grew upon the down, and find I have 720 bushels, from what was called worthless land, where people could not reap as much seed as they sowed. *Dumbrell.* Digging, drilling wheat, and pulling turnips.

WEDNESDAY—*Piper.* Keeps holyday. *Dumbrell.* Drilling, and digging wheat stubble.*

THURSDAY—*Piper.* Digging wheat stubble. *Dumbrell.* Digging, and drilling wheat, and harrowing.

FRIDAY—*Piper.* Digging wheat stubble. *Dumbrell.* Digging, and drilling wheat, and harrowing.

SATURDAY—*Piper.* Getting mould along side the hedge rows. *Dumbrell.* Digging, heifer carried one load of dung.

Yorkshire.

Operations during the Week.

Slaithwaite School. No report. *C. Varley* digging, and gathering stones. *James Bamford* draining. *John Bamford* draining.†

COW-FEEDING.

Piper's. As usual, with hay for plum cake on Christmas-day.

Dumbrell's. One cow stall fed with turnips, mangel wurzel, and straw. One cow and heifer fed with turnips and straw during the week.

* *Exhausted Wheat Stubble.*—Now is the time for breaking up your wheat stubble, and if it wants manure, mending it for a following turnip crop. Sow every where for a supply of manure for the spring, and after all, you will not have more than enough then, when it is wanted.

+ *Employment of the Poor.*—The draining of these small farms at Slaithwaite was done at the expense of their noble landlord; and *Bamford* adds, with considerable feeling, in a note, "that nothing but the purest benevolence could have dictated so timely an interference to assist the operative unemployed manufacturers, and it was gratifying to observe the pride with which the men entered upon their labours, and to hear their affectionate expressions towards the noble and good Earl, their patron and employer on the present occasion, when the change of modes, or improvements in manufacturing facilities, had left them in the rear, cast off, to shift for themselves as they best could, and without other resource than the parish."

NOTES AND OBSERVATIONS.

is tilted upwards to increase its velocity. A 30 gallon barrel of this kind, drawn by a heifer in harness, or by the ass you are often obliged to keep, to carry your work, from the factory, up the steep hills to your mountain home, might be managed by a boy, and would be an achievement worthy of your efforts.

"It is only by imitating the rural economy of foreign countries—by obtaining a quick succession of green crops—and by losing no opportunity to intercalate tares, rye, turnips, scarlet trefoil, Belgian carrots, and above all, by landlords making homesteads in a condition capable of collecting and preserving every atom of manure, that the agriculture of Great Britain will be able to keep pace with her steadily increasing population."

—Rev. W. Thorpe.

Advantages of Soiling Cattle.—Sir John Sinclair states them to be seven:—

1. *Saving of Land.* As reported to the Board of Agriculture, thirty-three head of cattle were, from the 20th of May to the 1st of October, 1815, on 17½ statute acres, when it would have required 50 acres to have pastured them.
2. *Saving of Fences.*
3. *Saving of Food.*
4. *Improvement within doors.*
5. *The greater product in milk.*
6. *Increasing the quantity and improving the quality of manure.*
7. *Obtaining a higher value for the produce of the soil.*

To which the Rev. W. THORPE adds, "*The making as much manure in the summer months as in the winter.*" MR. HOWARD, the worthy secretary to the Yorkshire Agricultural Society, has practised this upon a large scale for a number of years. A field of 14 acres is divided by him into seven parts, and sown with barley, red clover, mangel wurzel, winter tares, swedish turnips, spring tares, and turnips: affording seven acres of winter food, and seven acres of summer food for the cattle in the farm yard. He says,—“There is no doubt that one acre of these turnips, carted green to the farm yard, and given to horses and cattle in a cool stable, will go further than four acres of the best grass land; and by the practice of soiling, an arable farm may be made to support as much stock as a grazing one.”—*Farming at Scoreby*, p. 26.

“————— Here let the swain retreat,
His flock before him, stepping to the fold,
————— and there, remain
All the hot noon, 'till cooler hours arise.”—Thomson.
And avoid the pestilential damps of night.

English Prejudices against Cattle Soiling.—Whether English prejudices may ever allow the soiling of cattle entirely within doors to be carried into effect, may admit of question; one thing, however, admits of no question whatever, that not a single argument, of any weight, can be brought forwards in favour of their remaining in

January.

Week commencing Monday, January the 1st, 1844.

Sussex.

MONDAY—*Willingdon School.* Boys digging wheat stubble. *Eastdean School.* Fourteen boys digging stubble, gathering and toping turnips. *Piper.* Rubbing out carrot seed.* *Dumbrell.* Rain and snow, repairing buildings.

TUESDAY—*Willingdon School.* Boys digging as before. *Eastdean School.* Boys digging, and treading wheat, picking stones, and breaking clods. *Piper.* Rubbing out carrot seed. *Dumbrell.* Snow on the ground, repairing road to the fields.

WEDNESDAY—*Willingdon School.* Boys digging wheat stubble. *Eastdean School.* Boys digging, emptying tank, picking out weeds for the pigs. *Piper.* Cleaning out the pigs. *Dumbrell.* Mending the road with chalk.

THURSDAY—*Willingdon School.* Boys digging. *Eastdean School.* Boys thrashing wheat over a barrel, plattting straw for hats, and at their multiplication table. *Piper.* Drawing mould to dung mixen. *Dumbrell.* Digging, and pulling up turnips.

FRIDAY—*Willingdon School.* Boys digging wheat stubble. *Eastdean School.* Boys digging for peas, picking up mangel wurzel leaves and small potatoes for the pigs. *Piper.* Cleaning pigs out, and putting mould in the pound instead of litter. *Dumbrell.* Digging.

SATURDAY—*Willingdon School.* Boys digging stubble. *Eastdean School.* Boys emptying cow tank, portable pails, cleaning pigs, and school. *Piper.* Drawing pigs' manure to the mixen. *Dumbrell.* Digging.

Yorkshire.

Operations during the Week.

Slaithwaite School. No report. *John Bamford* removing clay from the drains, digging. *C. Varley,* Frost and snow, emptying the tank on the wheat, digging for potatoes. *Taylor,* paring ground. *James Bamford* carting manure, draining and digging, when the weather permitted.

COW-FEEDING.

Willingdon School. Cows fed once a day with white, and once with swede turnips, and straw.

Dumbrell's. One cow stall fed with turnips, mangel wurzel, and straw. One cow and heifer fed with turnips, and straw.

* *Carrot Seed.*—To preserve it properly it must be put in a dry bag, kept in a dry room, or hung up in your kitchen. Squeeze it well into the bag, as close as hops in a poke; and, like them, the seed will keep all the better.

NOTES AND OBSERVATIONS.

the green pastures, exposed to the attacks of insects at noon-day, or the vicissitudes of weather during the night. Common sense must be entirely in favour of stall feeding, at any rate, during two-thirds of every twenty-four hours; and their wishes will soon be manifested if you afford them the opportunity. They naturally desire to betake themselves, for several hours, to the stalls at noon-tide, and would rather come to the milking pail within doors in the evening, and remain there all night, than that it should come to them in the meadows. So that, with all our prejudices, we may rest assured that two-thirds of their manure ought to be saved, by stall feeding, even on the ground of its being more beneficial to the cattle, and more consonant to their feelings. And if it should be contended, that by their ranging over the pastures, the soil still receives all the manure voided by the cattle, I answer, that truly it does so, but a thousand times greater in quantity, in most places, than the plants upon which it falls require, and that the rejected portions of it, particularly the fluid parts, soon descend out of the reach of vegetation, and moreover, that plants, like animals, may be fed to repletion; a certain definite quantity of food they require, and must have, but more than that quantity, a quantity most accurately defined, they cannot receive into their system without injury.

Sowing Peas and quantity of Seed.—This is a proper time (January) for sowing the earlier kinds of peas—when sown thus early, less seed will be required, while on dry land, the produce will be greater. This crop follows corn, the soil is turned over and generally well mellowed by frost, but not manured. The seed is drilled on the level, and the rows drawn at a distance of twelve inches. The hand hoeing follows early, and the crop is kept particularly free from weeds. DUMBRASS sows four bushels to the acre, in January, while PIPER does not sow till the middle of March.

“A landlord will make loud complaints if a tenant take several white crops in succession, and yet, permit one half of the manure on the farm, to be lost in the liquids.”

Cattle stalls in Zurich and Flanders.—In Flanders, where the soiling system is carried out to great perfection, they have a curious method of collecting liquids, &c., from cattle, thus described in the *Bulletin de la Soc. de Genève*, as being commonly practised by the cultivators of Zurich also.

“The floor on which the cattle are stalled, is formed of boards, with an inclination of four inches from the head to the hinder parts of the animal, whose excrements fall into the gutter behind, in the manner usual in english cow-houses; the depth of the gutter is 15 inches, its width 10 inches; it should be formed so as to be capable of receiving, at pleasure, water from the reservoir, it communicates

January.

Week commencing Monday, January the 8th, 1844.

Sussex.

MONDAY—*Willingdon School.* Boys digging wheat stubble, for turnips, mangel wurzel, carrots, and turnips. *Eastdean School.* Twelve boys to school, rest at work for the farmers, digging, and gathering weeds and stones, for peas. *Piper.* Cleaning pigs out. *Dumbrell.* Digging.

TUESDAY—*Willingdon School.* Boys digging wheat stubble. *Eastdean School.* Boys digging for peas, clearing the roots and stones. *Piper.* The same as yesterday. *Dumbrell.* Digging.

WEDNESDAY—*Willingdon School.* Boys digging wheat stubble. *Eastdean School.* Boys emptying tank, and spreading contents on the land for carrots, manuring with dung, and clodding. *Piper.* Digging wheat stubble, for turnips. *Dumbrell.* Digging stubble.

THURSDAY—*Willingdon School.* Boys digging wheat stubble. *Eastdean School.* Boys thrashing wheat, digging stubble, and clearing away the roots. *Piper.* Drawing mould to the mixen. *Dumbrell.* Digging, heifer carrying manure.

FRIDAY—*Willingdon School.* Boys digging wheat stubble. *Eastdean School.* Boys digging for peas, getting and topping turnips, gathering stones. *Piper.* Digging wheat stubble. *Dumbrell.* Digging all day.

SATURDAY—*Willingdon School.* Boys emptying tank liquid, for spring tares, and turning mixen. *Eastdean School.* Boys cleaning up wheat, cleaning out pigs, portable pails, the school, and getting food for to-morrow. *Piper.* The same as yesterday. *Dumbrell.* Digging.

Yorkshire.

Operations during the Week.

Slaithwaite Tenants. *Taylor,* Digging, and burying parkings. *James Bamford,* draining, and digging. *John Bamford,* digging. *C. Varley,* digging for potatoes, mixing mould with dung; digging oat stubble, for turnips, cutting hay and straw.

COW-FEEDING.

Willingdon School. Cows fed on swede turnips, and oat straw.

Dumbrell's. One cow stall fed with mangel wurzel, turnips, and straw. One cow and heifer fed with turnips, carrots, and straw.

NOTES AND OBSERVATIONS.

with five pits, by holes which are opened for the passage of the slime, or closed as occasion requires.

" The pits, or reservoirs of manure, are covered over with a floor of boarding, placed a little below that on which the animals stand ; this covering is important as facilitating fermentation. The pits or reservoirs are made in masonry, and should be bottomed in clay, well beaten, in order to avoid infiltration. They should be five in number, in order that the liquid may not be disturbed during the fermentation, which usually lasts four weeks. Their dimensions should be calculated according to the number of animals held by the stable, so that each may be filled in a week ; but whether full or not, the pit must be closed at the week's end, in order to maintain the system of the regularity of emptying. The reservoirs are emptied by means of portable pumps.

" In the evening the keeper of the stable lets a proper quantity of water into the gutter, and in returning to the stable in the morning, he carefully mixes with the water, the excrement which has fallen into it, breaking up the more compost pieces, so as to form of the whole an equal and flowing liquid.

" During the day, whenever he comes into the stable, he sweeps whatever excrement may be found under the cattle into the trench, which may be emptied as often as the liquid it contains is found to be of the proper thickness ; the best proportion of the mixture is three-fourths of water to one-fourth of excrement, if the cattle be fed on corn ; but if in a course of fattening, one-fifth of excrement to four-fifths of water will be sufficient. " This method," observes Mr. Loudon, " is in general use in Holland, the Netherlands, and in France;" and he strongly recommends it to the British farmer, and not to the farmer only, but to every cottager who keeps a cow, or a pig ; nay, to the cottager who is without these comforts, but who has a garden in which to apply the soap suds, offal, slops, &c., made upon his premises."

If the cattle in this method lie upon the bare boards, the very idea of it would be contrary to the feelings of the English farmer. And if they are littered in the usual manner, the intrusion of straw into the gutters would make the emptying of the tanks by the pump very difficult. The practice of compounding the liquid with the mould, as practised at Eastbourne, is, I believe, found to answer so well, that a change of plan is rendered quite unnecessary, and experience appears to incline practical men to the belief, that the application of the liquid when fresh, is the best method that can be adopted, and not in the fermented state.

* * Let all the small farmers, field gardeners, and allotment tenants, club their pence together, and take monthly the "*Labourer's Friend*," price 3d., "*The Farmer's Magazine*," price 2s., and the "*Quarterly Journal of the Royal Agricultural Society*." They will receive much useful information from such works, as well as pleasure.

January.

Week commencing Monday, January 15th, 1844.

Sussex.

MONDAY—*Willingdon School.* Boys digging up stubble for potatoes, mangel wurzel, &c. *Eastdean School.* Boys digging for peas, drawing manure, gathering stones. *Piper.* Driving mould to the mixen. *Dumbrell.* Carrying out, and spreading manure on the wheat, in a frost.

TUESDAY—*Willingdon School.* Boys digging up stubble. *Eastdean School.* Boys digging for peas, gathering roots, and mangel wurzel leaves. *Piper.* Driving mould to the mixen. *Dumbrell.* Carrying out, and spreading manure upon wheat, in a frost.

WEDNESDAY—*Willingdon School.* Boys digging up wheat stubble. *Eastdean School.* Boys digging for peas, clod breaking, spreading tank liquid on the carrot ground. *Piper.* Driving dung to the mixen, and mixing it up well with mould. *Dumbrell.* Manuring wheat during a frost.

THURSDAY—*Willingdon School.* Digging wheat stubble. *Eastdean School.* Digging for barley, sorting potatoes, treading wheat, clod breaking. *Piper.* Driving mould to the mixen. *Dumbrell.* Digging, drilling peas.

FRIDAY—*Willingdon School.* Digging up wheat stubble. *Eastdean School.* Boys threshing wheat over a barrel, plaiting straw, and learning to make beehives. *Piper.* Cleaning out piggery, emptying tank liquid on the mixen. *Dumbrell.* Digging, drilling peas.

SATURDAY—*Willingdon School.* Boys digging wheat stubble. *Eastdean School.* Boys breaking up pasture land, emptying tank, portable pails, and cleaning school room. *Piper.* Taking potatoes in for the pigs. *Dumbrell.* Digging, drilling peas.

Yorkshire.

Operations during the Week.

Slathwaite Tenants. *James Bamford,* draining. *C. Varley,* spreading tank liquid on grass land, digging for turnips and oats, draining.

COW-FEEDING.

Willingdon School. Cows fed on swede turnips, and oat straw.

Piper's. Swede turnips and straw for breakfast, straw for dinner, swede turnips and hay for supper.

Dumbrell's. One cow stall fed with turnips, mangel wurzel, and straw. One cow and heifer fed with turnips, carrots, and straw, during the week.

NOTES AND OBSERVATIONS.

"Let no presuming impious rafter tax
Creative Wisdom, as if ought was form'd
In vain, or not for admirable ends."—*Thomson*.

Chemical Tillages at Home.—It is a very remarkable thing, that all the investigations of chemists, and the experiments of practical farmers, and some of them have been truly ingenious, would seem to point to "home" as the source of the most valuable manures.

A great variety of substances have been tried as fertilizers, but the best amongst them are found to be those, that may be said to be ready at hand amongst our "household stuff."—Thus, you have rape dust as home produce; you have common salt in continual use; you have salts of ammonia, of potash and of soda, as well as phosphates of lime, and magnesia in the urinary, and other excretions, and in a form too, best fitted for vegetation. Sulphate and muricate of ammonia (*sal ammoniac*) are found in the soot from coal fires: while potash or its salts are found in the ashes of wood fires, as well as in the water ejected after purifying the body, or its covering, by washing with soap, or other detergents. You have abundance of phosphate of lime, (*bone ash*) &c., in the hair, flesh, and bones of animals. Nitre (or *Salt-petre*) forms spontaneously around you, in the soil, its grand element, nitrogen, being derived from the atmosphere, or from the transformation of the ammonia of decaying bodies; which element, nitrogen, is so essential to vegetable life, that it has been termed the "*moving agent*," which acting under the living principle of the plant, moulds into shape the other elements; nay more, you have a substance that contains all these things, a complete type of guano, in the dung of your domestic fowls.

"Serene Philosophy!
Effusive source of evidence and truth,
Without thee, what were unassisted man;
A savage, roaming through the woods and wilds
Rough clad; devoid of every liberal art,
And elegance of life"—*Thomson*.

Such are the principal fertilizers, as established by chemical theory, and the nicest experiment, and such facts are most significant and demonstrative that, in nature, there are very admirable provisions for our preservation. They seem to declare to us, that, wherever there is life, at the same time most of the elements necessary for its existence are forming in its vicinity. And especially would it seem to be pointed out to us, that cultivation, on any space, must derive more support from the animal existence, upon that space, and the labours of man, properly directed, than from any other source. This constitution of things, we might expect to find in a world, where there are so many, and such beautiful adaptations. Man requires continual and uninterrupted supplies of food, and it does not appear to have been designed, that he should go far from home for the things to aid him in its production, but rather that

January.

Week commencing Monday, January the 22nd, 1844.

Sussex.

MONDAY—*Willingdon School.* Boys digging for beans, and peas, after turnips. *Eastdean School.* Sixteen boys digging for peas, drilling, and covering them, and clearing away roots. *Piper.* Seeking mould under old hedges. *Dumbrell.* Digging, drilling peas.

TUESDAY—*Willingdon School.* Boys digging for peas, after turnips. *Eastdean School.* Boys digging turnip ground, for barley, treading wheat, gathering weeds and stones. *Piper.* Grubbing out stones, for road making. *Dumbrell.* Digging, drilling peas.

WEDNESDAY—*Willingdon School.* Boys digging turnip ground, for beans and peas. *Eastdean School.* Boys digging ground, spreading tank liquid upon it, clod breaking, previous to barley sowing. *Piper.* Grubbing for, and drawing mould to the mixen. *Dumbrell.* Digging for, and drilling peas.

THURSDAY—*Willingdon School.* Digging, as yesterday. *Eastdean School.* Digging for mangel wurzel, spreading pig manure upon it. *Piper.* Driving dung and mould to the mixen. *Dumbrell.* Manuring the wheat, digging and drilling peas.

FRIDAY—*Willingdon School.* Digging as before. *Eastdean School.* Taking in oat rick, and thrashing some for the pigs, having twelve now, and having fatted 60 stones of pork since harvest. *Piper.* Driving mould to the mixen, and applying tank liquid to it. *Dumbrell.* Digging.

SATURDAY—*Willingdon School.* Drilling beans and peas. *Eastdean School.* Removing old thatch, stacking it for the pigs, cleaning school, and emptying the pails. *Piper.* Getting onion ground ready. *Dumbrell.* Digging.

Yorkshire.

Operations during the Week.

Slaithwaite Tenants. *James Bamford,* draining going on. *Taylor,* sowed one strike of barley, and the same quantity of tares, to be second cropped with italian rye grass, and the second shooting of barley. *C. Varley,* digging for oats and turnips, draining.

COW-FEEDING.

Willingdon School. Cows fed on swede turnips, and oat straw.

Dumbrell's. One cow fed as last week. One cow and heifer as last week.

NOTES AND OBSERVATIONS.

his life should be made to depend upon that of the animals near his dwelling, coupled with his own forethought and industry. In the wilderness, by calling around him, by allying himself with, and promoting the existence of the domestic animals, he would live as a civilized being—while without them he must perish, or sinking into the savage state, exist as a savage, by the chase; so that the domestic animals may properly be said to be the pioneers of civilization.

"*M. LIEBIG* is inclined to measure the civilization of any country by the quantity of sulphuric acid (oil of vitriol,) consumed therein."

Utility of Science.—Science may not have been fortunate in offering to the agriculturist an enlarged list of fertilizers, but it has done much, in teaching us how to elaborate into composts the natural manures, and artificially to imitate these things. We have been instructed by it how to fix their volatility, to reduce them to a finer state, to the increase of their energy upon vegetation, and how to apply them, with something like precision, to the requirements of the different species of vegetables. We reduce bones, mechanically, to dust, in order that they may act upon our crops with greater energy; but the chemist, by employing solvents, can reduce them to a state of division, greater by thousands of degrees. It was *M. LIEBIG* who first directed bones to be decomposed, by sulphuric acid, *oil of vitriol*, and the suggestion has been so practically useful, that I may safely bring before your notice, and recommend a trial of his process. Be it understood, however, that I wish all attempts of an experimental nature to be effected, in the first instance, upon a small scale, for an application of a particular substance, may be beneficial upon one soil, and have no effect whatever upon another. In general, however, the good effects of the "bone solution" has been so decided, its efficacy so great, in various places, that a trial may be undertaken with some confidence.

The solution of bones has been applied to crops, in many instances, with great effect, and the results wonderfully accord with the predictions of science.—See *Mr. Pusey's Report*.

Bones dissolved in Oil of Vitriol.—Provide a wooden vessel to hold 40 gallons, which place in a corner of your shed. Pour into it eight gallons of water. Then add 24 lbs. of *Oil of Vitriol*; and afterwards One Bushel of Bones, finely ground. Stir all well together, and frequently. After a few hours you will find the earthy part of the bones completely dissolved, and nothing remaining but the cartilage, or glue of the bones, in the fluid, and the fat swimming upon the surface of it, in the form of animal oil. The solution presents a milky appearance, like gruel, and if applied alone to the crop, may be further diluted with plenty of water. This quantity will be sufficient for a rood of turnips; the method of applying it

January.

Week commencing Monday, January the 29th, 1844.

Sussex.

MONDAY—*Willingdon School*. Applying liquid and solid manure, for spring tares. *Eastdean School*. Twelve boys digging and sowing peas, and drawing manure to the drills. *Piper*. Planting carrots, and swede turnips for seed. *Dumbrell*. Digging.

TUESDAY—*Willingdon School*. Boys digging for spring tares. *Eastdean School*. Boys digging for oats, chopping clods for grit, picking off stones. *Piper*. Planting underground onions.* *Dumbrell*. Digging, and drilling 12 rods with tares, heifer carrying dung.

WEDNESDAY—*Willingdon School*. Digging for spring tares. *Eastdean School*. The same as yesterday, boys emptying contents of the tank upon the ground. *Piper*. Planting underground onions. *Dumbrell*. Harrowing, picking up rubbish, digging, heifer carrying dung.

THURSDAY—*Willingdon School*. Digging as before. *Eastdean School*. Digging turnip ground up for barley, to mellow. *Piper*. Breaking up fresh ground. *Dumbrell*. Manuring wheat, digging.

FRIDAY—*Willingdon School*. Snow on the ground, boys in the school. *Eastdean School*. Snow, boys in the school all day, or thrashing oats, and plaiting straw. *Piper*. Thrashing barley. *Dumbrell*. Snowy day.

SATURDAY—*Willingdon School*. Snow, boys in the school. *Eastdean School*. Shovelling away the snow. *Piper*. Snow heaving. *Dumbrell*. The same.

Yorkshire.

Operations during the Week.

Slaithwaite Tenants. *C. Varley*, digging for turnips and oats, severe frost, and much snow after Tuesday, and all farming operations suspended.

COW-FEEDING.

Willingdon School. Cows fed on swede turnips, and oat straw. *Dumbrell's*. One cow stall fed as before. One cow and heifer stall fed as before.

* *Planting Underground Onions*.—Draw out a small drill, manure well, set your onions within the manured drill, and earth very slightly. Draw another drill, at a distance of 14 or 16 inches, and proceed the same, placing the onions 9 inches distant from each other. When they begin to grow, hoe round about, and pour tank liquid between the plants, but not upon them.

NOTES AND OBSERVATIONS.

will be afterwards adverted to. It may be composted also into the solid form, and its application in that state will, in certain seasons, be far more convenient.

"Bones may be roughly stated to consist of fat, jelly, and an earthy matter called phosphate of lime. This earthy part may be withdrawn, or *fetched out*, by the action of oil of vitriol. The fat, the jelly, and a substance called phosphoric acid are set free, the latter having grand fertilizing properties."—See Mr. Pusey's Report.

Souring Vessel.—I adopt this name from the dyer, as being a term of his art, familiar to many of you; I apply it to "the tub or vessel above-mentioned, which I would have you to consider as a fixture in the corner of your shed. Supply it occasionally with a portion of oil of vitriol and water, and therein keep up a gradual dissolution of bones, by regularly feeding the fluid with them. To this end let not a bone of any kind depart from your premises, gather your own for this purpose, or procure a supply elsewhere. Pound them with a mallet, into rough fragments, and throw them into the *souring tub*. The acid will penetrate their substance, dissolve their earthy part, if even moderately large, and leave the animal matter behind in soft masses. Thus you will have a continual supply of bone solution, wherewith to feed the guano-compost, a description of which follows.

Note well. *Oil of Vitriol being a most corrosive substance, must be used with extreme caution; and should a drop fall upon any part of the person, let the part be plunged, instantly, into cold water, and well washed.*

"Guano, or the dung of birds generally, possesses the united virtues of both the liquid, and solid excretions of animals."

Home made Guano.—Mix the contents of the privy-pails, in the manner described in the note to page 8, with six times their bulk of finely sifted coal-ashes, along with a few pounds of gypsum. Beat the mixture up with as much of the "bone solution" as it will retain. Leave the heap flattened down to dry spontaneously in a corner of the shed; as it does so, add from time to time, and diffuse equally over the heap, as much chamber-lye as it will hold. As the mixture still continues to dry, water it with the bone solution, and chamber-lye alternately, but keep the latter in excess. Thus you may enrich the mess to any degree. When there is a further supply of soil in the privy-pails, you may compound it afresh with the heap already formed, or proceed as before to make a new one. I need not describe the *rationale* of the process, but may remark that such a compost, after a sixth part of its weight of common-salt has been added, must be a close imitation of the natural guano.

February.

Week commencing Monday, February the 5th, 1844.

Sussex.

MONDAY—*Willingdon School.* Snow, boys in the school. *Eastdean School.* Twelve boys digging, and drawing manure for potatoes, picking stones. *Piper.* Thrashing barley, and from home on business. *Dumbrell.* Snow, no report.

TUESDAY—*Willingdon School.* Snow, no report. *Eastdean School.* Boys thrashing oats, removing turnips from the heaps for the cows, and cleaning the pigstye. *Piper.* Mending my roads. *Dumbrell.* Making a tank, for the pig-pound.

WEDNESDAY—*Willingdon School.* Boys digging wheat stubble. *Eastdean School.* The same kind of work as yesterday. *Piper.* Same as yesterday. *Dumbrell.* Digging.

THURSDAY—*Willingdon School.* Boys digging wheat stubble. *Eastdean School.* Boys emptying tanks, drawing out manure and mould for a mixen. *Piper.* Improving road to my house. *Dumbrell.* Digging.

FRIDAY—*Willingdon School.* Boys digging up wheat stubble. *Eastdean School.* Boys digging, clod breaking, gathering roots, and treading tares. *Piper.* Improving road to my turnip field. *Dumbrell.* Digging.

SATURDAY—*Willingdon School.* Boys sowing spring tares. *Eastdean School.* Boys thrashing, and cleaning oats, cleaning out pigs, portable pails, and school room. *Piper.* Moving potatoes for my pigs.* *Dumbrell.* Digging.

Yorkshire.

Operations during the Week.

Slaithwaite Tenants. No reports. Their labours are suspended for the present by the very inclement weather.

COW-FEEDING.

Willingdon School. Cows fed as before.

Dumbrell's. No variation in the feeding since last report.

* *Pigs.*—Pay attention to your pigs, they will assist to pay your rent, and remember if you sell your potatoes now, you will sell your dung heap. Boil these for your pigs, which, mix well together with a little barley, or oatmeal; feed them rather sparingly than otherwise, and thus keep them in readiness for their meals. Over-feeding is as bad as not having enough. Throw over sometimes, to them a handful of mould, cinders, or grit, for this when eating potatoes they always require.

NOTES AND OBSERVATIONS.

Try all new plans on a small scale.
Some may succeed, should others fail.

Artificial Guano.—Always strive to make these useful things of *home produce* if you can do so. At the same time chemistry teaches us, in a very admirable way, how to imitate the natural guano by mixing together artificial ingredients. The following composition is recommended by Professor Johnstone, as a substitute for guano, which, I think, you will not rest satisfied without trying to fabricate. It has been proved by experiment to approximate, in value, in a considerable degree, to that excellent manure.

A mixture intended to equal, in effect, 1 cwt. of Guano.

	Value.
78½ lbs. of bone dust, at 2s. 6d. per bushel	4s. 4½d.
25 " of sulphate of ammonia	3 9
1½ " of pearl-ash	0 2½
25 " of common salt	0 6
2½ " of dry sulphate of soda	0 2½

132½ lbs. At a cost of 9s. 0½d.

All which substances, except the first, any druggist will supply.

Barochan Guano.—The following is an artificial mixture used by Mr. FLEMING, of Barochan, in Scotland, with considerable success, upon the turnip and other crops.

Bones dissolved in spirits of salt, instead of oil of vitriol	18½ lbs.
Charcoal powder	about 18½ "
Sulphate of ammonia, (gas salt)	about 9½ "
Common salt	about 9½ "
Gypsum	9½ "
Wood-ashes	about 46 "
Nitrate of soda, (cubic petre)	28 "
Sulphate of soda, (Glauber salts)	10 "
Sulphate of magnesia, (Epsom Salts)	10 "

Five cwt. applied to the Imperial acre.

158 lbs.

"The great importance of manuring with wood ashes, has been long recognized by agriculturists as the result of experience."—Liebig.

Wood-ash Charcoal.—When you can procure, at small expense, the underwood of copses, or brushwood of any kind, reduce it into charcoal-ash, in the following manner—kindle a good large fire of it, which stifle by covering closely up with sods, or earthy rubbish of any kind; or, if you can procure it, with slices of peat, never suffering the fire to break out into flame. You will thus have produced a light friable charcoal, it may easily be reduced to fine powder, which mix with the burnt earth that covered the fire. This compost will be found useful to mix up with natural or artificial guano.

February.

Week commencing Monday, February the 12th, 1844.

Sussex.

MONDAY—*Willingdon School.* Boys digging wheat stubble. *Eastdean School.* Twelve boys digging, and forming a mixen for potatoes. *Piper.* Digging, and mending meadows with liquid, *for now is the best time in the year.* *Dumbrell.* Manuring wheat, digging.

TUESDAY—*Willingdon School.* Boys digging wheat stubble. *Eastdean School.* Boys digging two spits deep for carrots, manuring with tank liquid, and gathering stones. *Piper.* Fencing, and *now is the time for hedging and ditching; you will have no time for it next month.* *Dumbrell.* Manuring the wheat, digging.

WEDNESDAY—*Willingdon School.* Top dressing wheat with manure. *Eastdean School.* The same as yesterday, and cleaning 4 bushels of oats for the pigs. *Piper.* Cleaning pigs out, mixing the dung with mould, and pouring tank liquid upon it. *Dumbrell.* Digging.

THURSDAY—*Willingdon School.* Top dressing wheat. *Eastdean School.* Boys digging, clearing out pig manure, mixing it with mould. *Piper.* Fencing, the proper time for planting *white thorn* and *privet.* *Dumbrell.* Digging.

FRIDAY—*Willingdon School.* Boys digging wheat stubble. *Eastdean School.* Boys thrashing oats, drawing manure, and opening turnip lumps. *Piper.* Sowing peas in drills.* *Dumbrell.* Digging.

SATURDAY—*Willingdon School.* Boys turning manure heap. *Eastdean School.* Boys thrashing oats, trussing straw, emptying portable pails, and cleaning school room. *Piper.* Breaking up fresh ground, a good time to do it, the frost probably may come to destroy the vermin. *Dumbrell.* Digging.

Yorkshire.

Operations during the Week.

Slaithwaite Tenants. *John Bamford,* preparing compost, weather unfavourable.

COW-FEEDING.

Willingdon School. Cows living on swede turnips, and straw. *Dumbrell's.* One cow stall fed with turnips, mangal wurzel, and straw. The cow and heifer fed with turnips, carrots, and straw.

* *Sowing Peas.*—Sow peas in drills 8 or 9 inches apart, four bushels to the acre. Four bushels of small peas will seed your ground as well as five bushels of large ones.

NOTES AND OBSERVATIONS.

"Carbon or Charcoal is capable of yielding slow but unceasing supplies of nourishment to living plants"—*Prof. Johnstone.*

If the rough cordy roots of crouch, or bent grass, or ling, are burned in a fire so stifled, with the rubbish or sods from old hedge-rows, or with soil scraped from the field; when compounded altogether, you will have a similar but more friable compost.

"M. SPRENGEL found that bones boiled, or burnt still acted as manure; the fact has been corroborated by recent experiments."—See *Mr. Hannam's Essay.*

Wood-ash and Animal Charcoal.—By enclosing hard bones in fires of this kind, they will become calcined, in which state they may be the more easily reduced to powder, without perhaps losing very much of their fertilizing properties. These powdered and mixed with wood-ash and the earthy covering of the fire, will yield a compost of value. But of course the dissolution of such bones in the acid of the *souring vessel*, is to be preferred for many reasons.

Wood-ash and Burnt-clay compost.—You may dispose of the clay from drains, &c., in a similar way, by burning it with brushwood. Kindle a fire, which, when moderately strong, cover up and stifle with sods and clay; as the combustion ceases, kindle another fire of brushwood around the first, which stifle up as before. The clay in the interior becomes glowing hot, and retains its heat so as to render very little additional fuel necessary, and even by covering over with a stratum of clay alone, the combustion may be promoted for some time, till the mass becomes very large. The wood-ash and the burnt-clay together, form a compost of considerable value, for very many purposes, and M. LIEBBIG shows clearly, that the latter substance must have a special effect on vegetation.

"Peat ought to supply an inexhaustable store of inorganic matter, for the amelioration of the adjacent soil."—*Prof. Johnstone.*

Peat-ash Charcoal.—But perhaps a most valuable ingredient of our composts, remains neglected, but in store for us on the mountains, and the carbonization of bog peat may yet form a new era in our husbandry. If you live near this material, try, like JOHN BAMFORD, to make peat charcoal by some such experiment as the following. Dry a portion of peat, and kindle it into a good fire, which you may enlarge by degrees till it is very hot, then stifle it with moist peat, which continue to do, as more is added and the mass increases, veins of the clay which often occur will not prevent the burning of it, and when the heap becomes very large, you may extinguish the fire by covering it with fine clay, which is always found as a floor in every peat bog. This substance will prove a capital material for mixing with guano, or a valuable top dressing for the grasses or turnips, but probably not for corn crops.

February.

Week commencing Monday, February the 19th, 1841.

Sussex.

MONDAY—*Willingdon School.* Boys digging wheat stubble. *Eastdean School.* Boys digging two spits deep for carrots, and manuring from the piggery mixen. *Piper.* Digging. *Dumbrell.* Putting tank liquid to rye grass, digging.

TUESDAY—*Willingdon School.* Boys digging wheat stubble. *Eastdean School.* Boys emptying the liquid manure tank of the piggery, applying it to the ground for mangel wurzel, &c. *Piper.* Sowing peas. *Dumbrell.* Digging.

WEDNESDAY—*Willingdon School.* Boys digging wheat stubble. *Eastdean School.* Wet weather, boys thrashing, picking, sorting, plaiting straw. *Piper.* Emptying the tank. *Dumbrell.* Digging.

THURSDAY—*Willingdon School.* Very wet, boys in school. *Eastdean School.* Drawing manure to the mixen, for potatoes, digging for carrots, and spreading cowshed tank liquid upon it. *Piper.* Cleaning barley. *Dumbrell.* Collecting mould.

FRIDAY—*Willingdon School.* Very wet, boys in school. *Eastdean School.* Boys thrashing, and cleaning oats, trussing straw, sorting potatoes. *Piper.* Collecting flint stones, to mend roads at a future time. *Dumbrell.* Digging.

SATURDAY—*Willingdon School.* Boys digging wheat stubble. *Eastdean School.* Boys emptying pails, getting turnips, cleaning up the pigs, and school room, and to the mill with oats to grind. *Piper.* Removing potatoes within doors. *Dumbrell.* Digging, collecting mould.

Yorkshire.

Operations during the Week.

Slaithwaite Tenants. No report.

Note.—It appears, from a note of *John Bamford's* of the following week, that while the weather in Sussex had been open, and favourable for the work of the husbandman, except for a few days, that of Yorkshire has been such as to suspend out-door work, except at intervals, for some time.

COW-FEEDING.

Willingdon School. The same as before.

Piper's. Feeding on carrots, with straw once a day, and hay once.

Dumbrell's. The same as before.

NOTES AND OBSERVATIONS.

Peat Compost.—The Rev. W. RHAM recommended the following compost—one ton peat ashes, one cwt. soot, one cwt. of lime, one cwt. of common salt, 14lbs saltpetre ; to be mixed well together. It has been tried, by J. BAMPFORD, and found very beneficial, when applied to artificial grasses of the second year.

“The meanest things, fulfil most useful purposes.”

Potash Compost.—The following method of collecting the potash, &c., from kitchen slops, has been found to answer satisfactorily. A pit was formed in a garden, about two yards square, and two feet deep, bottomed with puddled clay and roughly paved. In the summer time, or dry weather, it is filled with loose, porous mould, yard sweepings, &c. The water from the sink is led beneath its surface, through and over all parts of the mould, by a temporary drain of loose stones. The dry mould imbibes the fluid, and evaporation from its surface withdraws part of it, leaving the remainder moderately concentrated. This may be further promoted by sowing seeds of such plants upon the spot as love potash, they will grow there with great luxuriance, and increase the evaporation from beneath.

The contents are removed about twice in the year, allowed to dry in the sun, and then composted with lime, and sometimes with a further quantity of potash from the shops, turned over frequently, and after some months, mixed up with other ingredients recommended by Professor JOHNSTONE, as forming a good and cheap manure for potatoes ; or it is used instead of coal-ashes for making domestic guano.

“There is not an atom of matter in creation, but has its uses.”

Earth and Animal matter compost.—Do not loose a scrap of decayed animal substance of any kind, *blood, old rags, copper's flocks, engine-waste, mill-dust,* gather up all such things as may be offensive in their decay, and when divided work them up together with mould into a heap. Let it remain for a year; to be fully decomposed, turning it over several times. The watering of a mass of this kind with soap suds, or scourings from the cloth mill, will much increase its value. Very striking and long continued effects from the application of such a compost upon meadow land, are frequently witnessed in a manufacturing district. The action of such substances in their undecomposed state is very slow, and in some cases almost negative, as many of you must have witnessed.

Reservoir deposits.—The deposit at the bottom of reservoirs and stagnant pools, when it can be procured, will prove invaluable to you in making your various composts ; the owners of mills ought not to permit these things to be lost, but have them composted up with quick lime, they would be well repaid for their trouble.

February.

Week commencing Monday, February the 26th, 1844.

Sussex.

MONDAY—*Willingdon School.* Boys raking wheat stubble from the young clover. *Eastdean School.* Twelve boys digging for carrots, applying tank liquid, picking up roots and stones. *Piper.* Getting flints for future use. *Dumbrell.* From home.

TUESDAY—*Willingdon School.* The same as yesterday. *Eastdean School.* Digging for carrots, treading and weeding the tares, putting in beans, and planting cabbages. *Piper.* Cleaning pigs out, and composting the dung with mould. *Dumbrell.* Digging, and stacking litter.

WEDNESDAY—*Willingdon School.* Boys raking clover, turning dung, sowing a little rye for experiment. *Eastdean School.* Boys emptying pigstye tank, carrying dung to potatoe mixen, weeding clover, picking stubble. *Piper.* Removing potatoes within doors. *Dumbrell.* Digging, carrying manure for oats.

THURSDAY—*Willingdon School.* Boys raking clover. *Eastdean School.* Putting in peas, carrying manure for tares, treading wheat, picking stones. *Piper.* Digging, has a wonderfully fine calf to-day, from the cow he works in harness. *Dumbrell.* Digging, pulling turnips, wheeling manure.

FRIDAY—*Willingdon School.* Boys raking stubble. *Eastdean School.* Boys thrashing oats, trussing straw, and clearing the oats for seed. *Piper.* Emptying the tank, pouring liquid upon the mixen. *Dumbrell.* Digging, wheeling out manure, putting tank liquid to rye.

SATURDAY—*Willingdon School.* Boys gathering stones off the clover. *Eastdean School.* Boys emptying privy pails, and tank from the cows, cleaning out the pigs, and school room. *Piper.* Digging for carrots, to be sown in the latter part of March. *Dumbrell.* Digging, and wheeling out manure.

Yorkshire.

Operations during the Week.

Slaithwaite Tenants. No return.

COW-FEEDING.

Willingdon School. Changed to white carrots, and straw.

Dumbrell's. The same as before.

Soot.—Now provide soot for wheat, or seeds, and sow it about the beginning of March, after the rate of 30 bushels an acre, with 5 or 6 bushels of rough salt.

NOTES AND OBSERVATIONS.

"Woody fibre in a state of decay is the substance called *Humus*."—*Liebig*.

Humus Compost, No. 1.—Compost together, and mix intimately, peat, tanners' refuse, saw dust, weeds, the greater variety of vegetable substances the better, with 30 or 40lbs. of common salt, and about 8 gallons of quick lime for each couple of one-horse cart loads of such materials. Turn the heap over several times, and when wholly decayed apply the mixture, along with farm yard manure. It will be rich in *humus*, or partially decomposed woody matter. This substance in its further decay, when within the ground, nourishes the embryo plant, and is a kind of pap to support it in the early stages of its growth. The base of it, charcoal, in combination with another element, afterwards enters the more mature plant, as food, and thus, what was previously part of a dead plant, becomes, once more, a part of a living one.

No. 2.—When you have a mass of stubble roots, loaded with earthy matter, sods, and weeds, and much soil, you ought to ferment it into *humus*, if you would not wish to bring it to the mixen. Carry to it cow or stable dung,—horses litter is best for such a purpose. Compost it into a *humus* mixen in the field, as follows. Place a layer of dung, and then a much larger layer of the rubbish before mentioned, proceed, and build layer upon layer of them; see that the heap ferments well, and turn it over several times. In a few months you will find the roots decayed, and converted into very perfect *humus*, if the fermentation has been properly managed. Never burn such good things as these; the ashes certainly remain, but the woody part, which in its decay furnishes *humus*, is destroyed. This *humus*, or its combination humic acid, plays too important a part to be sacrificed. I must not present mere refinements of theory to you, but scientific persons will perceive at a glance my reasons for making these recommendations.

"In March and in April, from morning to night,
In sowing and setting must be your delight."

Spring Tares.—Use care in selecting seed; old seed will not always vegetate; reject such as, when bit asunder, will not easily separate, and such as are very hard or dark skinned. If you live in the south, you may by sowing early, and in an early spring, obtain a crop of spring tares, and afterwards dig and sow again, *two and a half bushels of tare seed, and half a gallon of rape per acre*, and still be in time to sow wheat before winter.

Conversion of the Spring Tare, into the Winter Tare.—It has been stated before, page 17, that the spring and winter tare are plants of the same species, but of different habits as to ripening. The change of habit is thus effected—In autumn, spring tares are sown in a well sheltered situation, if the plants can be made to stand over winter, their former habit is changed, and their

March.

Week commencing Monday, March the 4th, 1844.

Sussex.

MONDAY—*Willingdon School.* Boys digging the second time for white carrots. *Eastdean School.* Boys treading clover, removing stubble and roots, and turning a mixen. *Piper.* Gathering up flints for draining. *Dumbrell.* Rainy day.

TUESDAY—*Willingdon School.* Boys digging as before stated. *Eastdean School.* Boys digging for potatoes, picking out the roots, and covering a mixen with mould to keep the heat in, *Piper.* Top dressing seeds. *Dumbrell.* Wheeling out manure.

WEDNESDAY—*Willingdon School.* Boys digging the second time for white carrots. *Eastdean School.* Boys emptying tank, and spreading the contents on mangel wursel ground, breaking clods, and mould carrying. *Piper.* Removing turnips to the byres. *Dumbrell.* Digging, and spreading manure.

THURSDAY—*Willingdon School.* Boys clearing away stubble from the clover. *Eastdean School.* Boys digging, hoeing tares* and rye, and treading the same, small boys picking stones. *Piper.* Hoeing among underground onions,—*don't loosen them.* *Dumbrell.* Digging, and spreading manure.

FRIDAY—*Willingdon School.* Boys removing swede turnips from the heap. *Eastdean School.* Boys widening road, removing mould to the land, gathering stones, and turning a mixen. *Piper.* Hoeing among the onions,—*always hoe your seed turnips, and carrots as well.* *Dumbrell.* Planting early potatoes, drilling tares.

SATURDAY—*Willingdon School.* Wet weather, boys in school all day. *Eastdean School.* Boys cleaning out pigs, and portable pails, about the place, and school room. *Piper.* Cleaning out the pigs, mixing dung with mould. *Dumbrell.* Digging, and harrowing wheat.

Yorkshire.

Operations during the Week.

Slaithwaite Tenants. *John Bamford,* digging for spring wheat. Weather fine, but frosty

COW-FEEDING.

Willingdon School. Cows fed on oat straw, and turnips.
Dumbrell's. Cows fed as before.

* *Tare Hoeing.*—The hoeing of your winter tares must not be neglected. A top-dressing of 2cwt. of gypsum will be beneficial. All leguminous or pod plants require it, as animals require salt, or fowls require lime.

NOTES AND OBSERVATIONS.

seed on ripening has become what is called the winter tare seed, and may be sown, in confidence that it will again stand the winter, and attain early maturity in spring.

SPRING TARES.

Seed sown, four bushels to the acre, in drills.

From the 1st to the 8th of March, if the weather will permit, sow portions of spring tare seed, in succession, till May; as one crop appears above ground, sow another. Let your drills be six inches apart, use five bushels of mould manure to the rod, if you can spare it. You may safely use the leguminous steep described at p. 19, and if you add a little saltpetre, or sulphate of ammonia, (*gas salt*), it will be all the better. In the north of England, the spring tare is generally sown broadcast, using a sixth part of oats to support the plant.

CABBAGE-SEED BEDS.

One pound of seed will produce plants for an acre.

Sow on beds about four feet broad, successive portions of cabbage seed to supply plants to cut in winter. Select ground, rich, dry, and well sheltered, and manure it moderately. Sow in drills four inches apart, and if your seed be good, rather thin. The early *Hope* or *Scotch*, perhaps, may answer better than any other kind. They may be transplanted from April up to June.

Planting Cabbages.—If you wish for a supply at the latter end of autumn, it is time now to transplant them from the beds sown before last August. Use the compost described in p. 8, or, if you have not any, then follow J. HARRIS's method, which is this:—Empty the contents of your portable pails upon mould, and compost well with plenty more of it; open a trench, which fill with this earthy compost, and covering it lightly over, plant the cabbages therein.

RED AND WHITE CARROTS.

Seed sown, Red Carrots, 4 lbs., White, 3½ lbs., per acre.

The carrot loves a deep, sandy soil, free from stones or other obstructions. As soon after Michaelmas as possible, the ground having been digged two spits deep, receives a dressing of tank liquid, which is immediately digged in and well mixed with the soil; this is repeated three times, and found by J. HARRIS to answer better than solid manure. DUMBRELL does not apply manure, as his carrots follow a well manured crop. Select seed grown the previous year, and it has been recommended that it should be mixed well with plenty of sand, and watered with tank liquid for some days before sowing. The time of sowing red carrots must be early in March, either in drills, or broadcast; in the former case, the distance of the

March.

Week commencing Monday, March the 11th, 1844.

Sussex.

MONDAY—*Willingdon School.* Wet weather, boys in school. *Eastdean School.* Wet day, boys plattting, and at their multiplication tables, and writing. *Piper.* Cleaning and top-dressing lucerne, —do the same to your wheat, for now is the time. *Dumbrell.* Rainy day.

TUESDAY—*Willingdon School.* Boys turning manure heap. *Eastdean School.* Boys digging, carrying manure for potatoes, mending the clover, picking roots and stones. *Piper.* Cleaning lucerne,—manure it well, either with solid or liquid manure and mould. *Dumbrell.* Planting cabbages, drilling tares, and digging.

WEDNESDAY—*Willingdon School.* Boys carrying out manure, for top-dressing wheat. *Eastdean School.* Boys emptying the tank, carrying its contents to the ground intended for mangel wurzel and carrots, sowing tares. *Piper.* Weeding wheat,—if you hoe it, and the ground be loose, let the plant be firm at bottom. *Dumbrell.* Planting cabbages, drilling tares, drilling oats, digging, and applying tank liquid to wheat.

THURSDAY—*Willingdon School.* Boys rolling and treading wheat. *Eastdean School.* Boys digging, gathering roots for the mixen, cleaning oats, and sorting pig potatoes. *Piper.* Weeding wheat, it will want no top-dressing, it was well dressed at the bottom when sown. *Dumbrell.* Drilling oats.

FRIDAY—*Willingdon School.* Boys rolling and treading wheat. *Eastdean School.* Boys digging, rolling and mending tares, getting in turnips and mangel wurzel, for the cows. *Piper.* Mending wheat, not often too strong near Beachy-head, and if so, a crop without manure will cure it. *Dumbrell.* Drilling oats.

SATURDAY—*Willingdon School.* Boys carrying tank liquid for the intended carrot crop. *Eastdean School.* Boys cleaning out piggery, replacing the turf where mould for the mixen was got, clearing up. *Piper.* Emptying the tank. *Dumbrell.* Drilling oats, sowing onions in the garden, planting cabbages.

Yorkshire.

Operations during the Week.

Slaithwaite Tenants. John Bamford, in a note appended to his return, says, "Nothing has been done with the exception of turning some dung. The weather has been of so stormy a character, attended with frost and snow, that general farm labour has been out of question. I got the tare seed ready a fortnight ago, but as yet, there has not been an opportunity to sow any of it."

COW-FEEDING.

Willingdon School. Cows fed with clover, hay, and turnips.

Dumbrell's. One cow fed in the stall with mangel wurzel, carrots, and straw. One cow and heifer fed with turnips, carrots, and straw.

NOTES AND OBSERVATIONS.

drills is about 12 inches, the seed is scattered in by hand and covered slightly, then follows very careful hoeing, after the plants appear, not approaching too near them; they are afterwards weeded, and set out at a distance of three, or three and a half inches.

The white carrot may be sown at the same time, or a little later, the same precautions must be followed. On light land, when the manuring has been followed up, a succession of turnips, potatoes, and carrots, has often been beneficial to the farmer as well as to the land.

OATS.

Seed sown, in Sussex seven bushels, in Yorkshire six bushels, to the acre.

Sow oats early; for early sowing gives weight to the grain, while late sowing gives weight of straw. Chuse your seed from a poorer soil, adopting the variety to your soil and climate, but let the seed be good and heavy, and from the fens if possible. The Eastbourne field-gardeners sow from the beginning to the end of *March*, in drills, at six inches distance, using about three bushels of mould manure to the rod. In the north oats are always sown broadcast, commonly on fresh broken up pasture land, without manure. On fresh broken up peaty moorland, a dressing of quick lime adds greatly to the produce.

Steep for Seed Oats.—Take 24lbs. of common salt, dissolve it in twelve pails full of water, steep 6 bushels of seed in the solution for 12 hours; remove the seed, let it drain for one hour, it will easily divide, and sow, broadcast, on one acre. This method has long been practised by an individual, and has yielded, according to his estimate, an addition to his crop of one pack of meal per acre, and he states that the corn ripens 10 days earlier than usual.

SPRING WHEAT.

Seed sown, three bushels, value 21s.—Dibbled, one bushel, value 7s. per acre.—Expense of Dibbling, 1d.—Saving in seed, 14s.—besides horse and man's labour. Actual experiment.

Dibble, drill, or sow spring wheat; but after reading my motto I think, certainly, you will dibble. In general, a moderate liming on either winter or spring wheat answers well, where it is not the custom to manure this crop. In dibbling, steep your seed in urine, use a little quick lime, and plenty of rape dust to make it part. Let your rows be six inches apart, strike four holes at a time, six

March.

Week commencing Monday, March the 18th, 1844.

Sussex.

MONDAY—Willingdon School. Boys digging the third time for white carrots. *Eastdean School.* Boys rolling, and treading the wheat, and gathering stones. *Piper.* Sowing oats,—always select a fine time for doing it if you can. *Dumbrell.* Drilling oats, sowing cabbage seed, digging.

TUESDAY—Willingdon School. Boys digging as before. *Eastdean School.* Boys digging for oats, planting potatoes with manure, gathering roots and stones. *Piper.* Sowing oats,—the white oat answers best for me. *Dumbrell.* Drilling oats, sowing carrots, and parsnips in the garden, rolling wheat, and digging.

WEDNESDAY—Willingdon School. Boys digging as before. *Eastdean School.* Boys carrying out the pigtye tank liquid to the mangel wurzel ground, weeding clover. *Piper.* Hoeing onions. *Dumbrell.* Digging, harrowing oats.

THURSDAY—Willingdon School. Boys harrowing, and rolling ground for carrots. *Eastdean School.* Boys digging, planting potatoes with manure, placing beans, and hoeing the cabbages. *Piper.* Preparing ground for carrots. *Dumbrell.* Digging, drilling oats.

FRIDAY—Willingdon School. Boys harrowing, and rolling carrot ground. *Eastdean School.* Boys taking in the last oat rick, clearing up, and planting potatoes with manure. *Piper.* Preparing ground for carrots. *Dumbrell.* Digging, and drilling oats.

SATURDAY—Willingdon School. Boys sowing spring tares, harrowing and dressing after it. *Eastdean School.* Boys thrashing oats, clearing up rick, cleaning out pails and school, and clearing out. *Piper.* Sowing carrots,—a very proper time. *Dumbrell.* Digging, and drilling oats.

Yorkshire.

Operations during the Week.

Slaithwaite Tenants. *C. Varley*, says, "We have had stormy weather since January, no work could be done on the land." Digging for oats this week, wheat stubble for turnips, gathering stones. *John Bamford*, sowed tares. He says, "This week the weather has improved considerably; the snow has partially left our fields, and in some situations, and in certain conditions of the ground, farm labour has been performed; for instance, old lea has been turned up for oats, but such as was dug in autumn, has, up to Friday, been in far too wet a state to work." *James Bamford*, digging for tares, removing clay.

COW-FEEDING.

Willingdon School. Cows fed the same as last week.

Dumbrell's. No variation in the fodder.

NOTES AND OBSERVATIONS.

inches distance, three inches deep, place as near as you can guess three seeds in each hole, cover up immediately, and tread the seed in as you go on.

If your wheat crop follow potatoes or turnips, I think a good liming in most cases would be well, and in all cases a dressing of *home made* or domestic guano would be beneficial to your corn; or about 1½ cwt. to the acre of natural guano, well pounded, and intimately mixed, passing it through a sieve repeatedly, with *woof ash charcoal*, burnt clay compost, or coal ashes; or drill with the seed about six or eight bushels of rape dust per acre. The spring sown wheat is manured at Eastbourne with five bushels of mould manure to the rod.

BEANS.

Seed dibbled, two and a half to three bushels per acre.

Do not delay now to dibble in your beans. Beans ought to be sown in February. As this crop follows corn that has been well manured, no manure will be required. Place them in rows eighteen inches apart and three inches asunder, and cover in well three inches deep. *Mess.* Dibble a table bean between each one of your potatoe sets.

BARLEY.

Seed sown, broadcast, three and a half bushels; or drilled, two and a half bushels: for sowing six bushels per acre.

Barley comes best after turnips or other green crops; it is better suited to follow such crops than either wheat or oats. At Eastbourne it is sown in drills; but generally broadcast in the north of England. Roll the sward well after the plants are above ground.

Use the steep recommended for oats, with the addition of a few pounds of *nitrate of soda*, or *cubic petre*, let the seed be parted with gypsum and sown immediately.

ITALIAN RYE GRASS.

Seed sown, three to four bushels per acre.

Sow Italian rye grass seed any time from the first to the end of March, after winter or spring wheat, barley, and oats; let the plant grow alone, it is a *glutton*. It must be harrowed with the bush, or rolled in, no manure is applied until cut the first time, when tank liquid is used, after the rate of 25 gallons to the rod.

March.

Week commencing Monday, March the 25th, 1844.

Sussex.

MONDAY—*Willingdon School.* Boys digging second time for mangel wurzel. *Eastdean School.* Twelve boys digging, planting potatoes,* carrying manure, and gathering roots and stones. *Piper.* Turning mixen, and making it as fine as possible. *Dumbrell.* Digging for oats.

TUESDAY—*Willingdon School.* Boys digging same as yesterday. *Eastdean School.* Boys digging for and sowing oats, planting potatoes, digging for barley, and rolling, &c. *Piper.* Sowing carrots. *Dumbrell.* Drilling oats, digging.

WEDNESDAY—*Willingdon School.* Boys digging for skinless, or peruvian barley. *Eastdean School.* Boys digging, sowing oats, carrying tank liquid for the mangel wurzel and carrots. *Piper.* Hoeing seed carrots, and turnips. *Dumbrell.* Digging.

THURSDAY—*Willingdon School.* Boys digging as before. *Eastdean School.* Boys digging, sowing oats, thrashing oats, cleaning them for seed, cleaning out the pigs, &c. *Piper.* Hoeing onions. *Dumbrell.* Mending a fence.

FRIDAY—*Willingdon School.* Digging as before. *Eastdean School.* Boys digging, sowing oats, rolling clover, and treading it well, picking weeds, &c. *Piper.* Weeding wheat. *Dumbrell.* Carrying potatoes home, and dung back, mending a fence.

SATURDAY—*Willingdon School.* Boys turning manure heap. *Eastdean School.* Boys emptying portable pails, carrying manure to the tares, cleaning out tank, and school room. *Piper.* Weeding wheat. *Dumbrell.* Harrowing fallow with the heifer, digging.

Yorkshire.

Operations during the Week.

Slaithwaite Tenants. *C. Varley,* road making. *John Bamford,* sowing spring tares, harrowing, preparing ground for sowing spring wheat, cleaning ground for oats.

COW-FEEDING.

Willingdon School. Fed the same as before.

Dumbrell's. No variation in the feeding.

* *Potatoes.*—Let your potatoe ridges be nearly 3 feet apart, your sets 9 inches distant, and placed down whole, and your manure as fine as possible.

NOTES AND OBSERVATIONS.

RED CLOVER.

Seed sown, 12 lbs. of red clover, and one peck of common rye-grass, per acre.

After your spring wheat, oats or barley has been sown, harrow twice, and work the soil as fine as possible, this being favourable to the growth of small seeds. Divide your clover seed into two portions, sow one half lengthways, the other half across, then give a light harrowing, and roll the land well.

Clover sowing on winter wheat may be done earlier should the weather prove favourable; a bush, or common light harrow, may then pass over, to cover the seeds, after which the land must be well rolled.

TURNIP SEED BEDS.

Seed sown, three-quarters of a pound on beds, will furnish plants for one acre of land.

Above all, provide stores of swede plants at the earliest possible period, for transplanting. Begin early in April to sow successions of the best seed you can procure, and do not care for a small failure on account of frosty weather. Use the steep described in page 19, and pass the liquid through the seed many times, then mix up the moistened seed, right well, with a few handfuls of *home made guano*, in its driest state. Sow the mixture upon a 4 feet wide seed-bed, in a warm corner of your turnip field, and for protection cover it with thorn boughs; repeat this till you find your crop of plants out of danger.

Where weeds grow, better things might grow, and we never hear of weeds paying rent.

Top Dressing Wheat with Humus Compost, No. 2.—Where you observe your wheat pinched, poor, and half starved, give it a top-dressing now with fine *earthy manure compost*. Let it remain a week before you hoe, and you will find that this small dressing, and the hoe after it, will pay double for the labour bestowed. You cannot hoe your crops overmuch, whether there are weeds or not, for it will prevent the growth of them, and let the air into the soil, without whose influence there can be no vegetation.

"Prove all things, hold fast that which is good."—*Holy Writ.*

Top Dressings.—The time being at hand for top dressing your grass or corn crops, I hope you have provided "home made" hand tillages, and that your elaborating shed is crowded with those good things, having cost you only the labour of a few intervals of spare time. If the mould or *humus compost* is held in such estimation by the Eastbourne cultivators, what may not the *domestic guano compost* do for you, containing, as it does, so many things essential to vegetation?

April.

Week commencing Monday, April the 1st, 1844.

Sussex.

MONDAY—*Willingdon School*. Boys harrowing, and drilling ground for white carrots. *Eastdean School*. Boys digging, sowing oats and tares mixed, carrying manure, planting potatoes. *Piper*. Assorting potatoes. *Dumbrell*. Digging, heifer carrying manure.

TUESDAY—*Willingdon School*. Boys sowing white carrots. *Eastdean School*. Boys digging, clearing weeds and stones, and rolling for barley. *Piper*. Weeding wheat. *Dumbrell*. Digging, heifer carrying dung.

WEDNESDAY—*Willingdon School*. Boys harrowing, and rolling ground for peruvian barley. *Eastdean School*. Boys carrying tank liquid to the mangel wurzel and carrot ground, weeding tares and wheat. *Piper*. Weeding wheat. *Dumbrell*. Digging, heifer carrying manure.

THURSDAY—*Willingdon School*. Boys sowing peruvian barley. *Eastdean School*. Boys digging for barley, planting potatoes, weeding tares and wheat. *Piper*. Hoeing wheat. *Dumbrell*. Going a journey.

FRIDAY—*Willingdon School*. Holyday. *Eastdean School*. Holyday. *Piper*. At church on Good Friday, and says “he has never seen a bad one yet.” *Dumbrell*. Good Friday.

SATURDAY—*Willingdon School*. Boys rolling wheat. *Eastdean School*. Boys thrashing and clearing oats, chopping the straw, clearing out pails, piggery, and school room. *Piper*. Digging ground after turnips. *Dumbrell*. Harrowing peas, fallow, and wheat, clearing away rubbish.

Yorkshire.

Operations during the Week.

Slaithwaite School. Eleven to thirteen boys occasionally at work, preparing ground for oats. *James Bamford*, sowing and harrowing oats, spreading manure, removing clay, sowing peas and beans, mixed together, for soiling cattle. *C. Varley*, digging for oats, mixing cow and privy manure together. *John Bamford*, forking up, beating the soil fine, picking the couch grass roots.

COW-FEEDING.

Willingdon School. Cows fed on white turnips, and clover hay.

Dumbrell's. Cows stall fed with turnips, mangel wurzel, and straw. One cow and heifer fed with turnips, carrots, and straw.

NOTES AND OBSERVATIONS.

Dressing of Domestic Guano.—Try this in comparison with the other, by giving a dressing of half a cwt. to the rood : apply it previous to a shower, or when rain is falling ; it *may* do your sickly wheat *good*, it will do no *harm* at all events.

"The chief art of agriculture depends upon the collection and preservation of those manures which contain ammonia."

Ammonia or Hartshorn Spirit.—There is a substance now hawked from house to house under the name of "*scouring liquor*" or *harts-horn spirit*, well known to most of you, from its pungent smell. This smell arises from the exhalation of a peculiar vaporous, or aerial substance which it contains. The same substance in a gaseous, aerial, or vaporous state, exhales from the common smelling salts, from stale urine, or decaying animal substances. It is the *ammonia* I have spoken of before, and exists in all urinous fluids, it contains one of the great elements of fertilization. You will perceive that, being volatile, it must be continually flying away from the fluids that contain it, which may be prevented, however, by the employment of certain agents, *oil of vitriol* being one of them. Thus ammonia, under whatever form it may be presented to us, is a material of the greatest importance. Your tank liquid contains abundance of it, unfixed however, and ready to volatilize or fly away unless prevented. It becomes, therefore, an object of importance to decrease this instability, by causing it to combine with a substance of greater fixity.

"Whoever fails, says M. SPRENGEL, to employ some neutralizing substance to combine with the ammonia, which is produced in so great a degree in summer, suffers a loss of manure which exceeds all belief. It is a gaseous substance, and not a solid material visible to the naked eye, which thus escapes and is lost; but for all that, it is of greater importance to the nourishment of plants, than perhaps any other portion of the excrements."

Vitriolated tank liquid.—Add about 14lbs. of *oil of vitriol*, value 1s. 9d., to about 500 gallons of tank liquid, which, after stirring well, pump into the tank barrel, and apply as a top dressing to one third of an acre of meadow grass, intended for hay, or to the same area of winter wheat. The effect may probably surprize you. By this addition a combination is effected between the *oil of vitriol* and the *ammonia* of the tank ; sulphate of ammonia or *gas salt*, a fixed and stable compound, has been formed, worth far more than the oil of vitriol used. The acid has disappeared ; there will remain nothing of a corrosive nature in the liquid to act deleteriously upon vegetation.

April.

Week commencing Monday, April the 8th, 1844.

Sussex.

MONDAY—*Willingdon School.* Boys digging ground, and planting early potatoes. *Eastdean School.* Holyday for boys, master thrashing oats, and cutting straw. *Piper.* Hoeing wheat, for he says, if he allows himself to be *idle* now, he must not expect anything in *harvest*. *Dumbrell.* Rolling rye grass, putting tank liquid to it, harrowing wheat, planting potatoes.

TUESDAY—*Willingdon School.* Boys planting early potatoes, digging ground. *Eastdean School.* Boys sowing oats, hoeing wheat, rolling peas and tares. *Piper.* Hoeing wheat, and in four or five months, says, *he will be rewarded for it*. *Dumbrell.* Drilling tares, harrowing wheat and fallow, rolling the latter, and sowing clover on the wheat.

WEDNESDAY—*Willingdon School.* Boys planting potatoes as before. *Eastdean School.* Twelve boys emptying the tank, digging for, and sowing barley, sowing clover on the wheat, rolling it, and earthing up cabbages. *Piper.* Turning mixen, and putting tank liquid upon it. *Dumbrell.* Sowing clover upon the wheat, and harrowing in, digging.

THURSDAY—*Willingdon School.* Boys digging, and planting early potatoes. *Eastdean School.* Boys digging, and planting potatoes, manuring them, sowing barley, picking roots and stones. *Piper.* Digging, and getting the ground fine at top immediately, or it will be unkind in working. *Dumbrell.* Spearing potatoes, hoeing wheat.

FRIDAY—*Willingdon School.* Boys digging for, and planting early potatoes. *Eastdean School.* Boys sowing barley, planting potatoes, removing from the lump, and assorting potatoes. *Piper.* Planting potatoes, his cow draws the manure, and he will “*defy any farmer to shew one better for her age*.” *Dumbrell.* Hoeing wheat, heifer carrying dung and potatoes.

SATURDAY—*Willingdon School.* Boys planting potatoes as before. *Eastdean School.* Boys clearing out pails, piggery, school room, and getting cow fodder for to morrow. *Piper.* Digging, dredging the grass. *Dumbrell.* Digging, heifer dredging grass.

Yorkshire.

Operations during the Week.

Stainforth School. From twelve to sixteen boys occasionally at their afternoon labour. Digging, clodding, sowing, and harrowing oats.

C. Varley, sowing oats, harrowing spring tares, and preparing ground for turnips. *James Bamford*, forking over ground for turnips, filling drains, mending roads. *John Bamford*, spreading lime and ashes, sowing oats, and harrowing, sowing tares, preparing ground for turnips, spreading compost.

COW-FEEDING.

Willingdon School. Cows eating white turnips, which have stood the winter and clover hay.

Dumbrell's. Cows stall fed as last report.

NOTES AND OBSERVATIONS.

"In bones you have not all the substances that exist in wheat, but you have some of them, such as phosphate of lime, &c. Where do the animals get it?—from plants:—which draw it out of the soil for their accommodation. It is but right, then, to restore it, when done with, to the ground, that plants may feed upon it in their turn."

Phosphated tank liquid.—Put six gallons of water into your "souring tub" and 20lbs. of oil of vitriol, then add 40lbs. of bones, finely divided, when the earthy part is *fetched* completely out of the bones, and nothing remains but small cartilaginous masses, pour the semifluid mixture into the tank, the contents, if about 500 gallons, will be nearly neutralized, and the alkaline ammonia will be assumed as a component part of a fixed and highly fertilizing substance—*Phosphate of ammonia*. The result of the action being, that sulphate of lime or *gypsum*, phosphate of lime or *bone ash*, and phosphate of ammonia, have been severally eliminated or set free, all of them fertilizing agents of value, particularly the last, which may probably be found, by future experiments, to form the most active agent in guano.

Use this phosphated tank liquid, much diluted with water, as a top dressing, upon either grass intended for hay, or winter wheat, as before, viz. by scattering it over one third part of an acre of each of them, and I think the verdure called forth, by its agency, will surprise you. There is no corrosive quality whatever within it, a mild saline substance, and insoluble earthy matters having taken the place of the corrosive oil of vitriol that was added !!

If the chief fertilizing agency of coal ashes may be attributed to the small quantity of gypsum they contain—what good effects may not be derived by a large application of gypsum to the soil?

Gypsum top dressing.—In using gypsum as before directed in the early part of the month, and which ought to be applied to every variety of pod plants, from lucerne to the bean tribe, let it be scattered upon the moist plants, so that it may be partly absorbed by their leaves, it is found in their substance, and, therefore, must be necessary for them; as salt is required by an animal or lime by a bird. But because it may appear to you a poor tasteless thing, do not assume a conceit that it is inert and without virtue. It con-

April.

Week commencing Monday, April the 15th, 1844.

Sussex.

MONDAY—Willingdon School. Boys digging, and planting early potatoes. **Eastdean School.** Eight boys in school, rest working for farmers, digging, and sowing carrot seed, planting and manuring potatoes. **Piper.** Carrying fine worked manure, for potatoes. **Dumbrell.** Digging, and carrying dung with the heifer.

TUESDAY—Willingdon School. Same as yesterday. **Eastdean School.** Boys digging for and sowing barley, hoeing peas, and gathering roots and stones. **Piper.** Preparing ground for potatoes. **Dumbrell.** Digging, hoeing wheat.

WEDNESDAY—Willingdon School. Boys sowing clover seed on wheat, and harrowing in. **Eastdean School.** Boys emptying piggery tank, rolling oats, weeding wheat, removing refuse. **Piper.** Planting potatoes. **Dumbrell.** Digging.

THURSDAY—Willingdon School. Boys harrowing wheat. **Eastdean School.** Boys digging, planting potatoes, sorting potatoes, and preparing turnip ground. **Piper.** Planting potatoes. **Dumbrell.** Digging, rolling wheat.

FRIDAY—Willingdon School. Boys harrowing wheat. **Eastdean School.** Boys planting potatoes, sowing barley, weeding wheat, clearing away roots and stones. **Piper.** Scraping up manure. **Dumbrell.** Harrowing wheat.

SATURDAY—Willingdon School. Boys digging ground, and manuring for mangel wurzel. **Eastdean School.** Boys cleaning out the piggery, portable pails, school room, and thrashing and cleaning oats. **Piper.** Planting potatoes. **Dumbrell.** Drilling carrots.

Yorkshire.

Operations during the Week.

Scalwithgate School. From eight to eleven boys at afternoon labour, breaking clods, gathering stones, and harrowing. **John Bamford,** preparing turnip ground, spreading ashes thereon, planting potatoes. **James Bamford,** drawing manure for potatoes, planting them, preparing ground for, and planting beans and peas. **C. Varley,** preparing ground for turnips, manuring for and sowing tares, sowing peas and wheat together, and harrowing in; “weather mildest and richest ever witnessed here.”

COW-FEEDING.

Willingdon School. Cows fed as before.

Piper's. Has begun to cut his rye, keeps it a day before he gives it to the cows, and mixes a handful of hay with it.
Dumbrell's. Fed as before.

NOTES AND OBSERVATIONS.

tains, mild as it may seem, nearly half its weight of the strongest oil of vitriol—which, when such gypsum is put into the ground, is gradually let loose, and seizing the ammonia it finds in the soil, converts it into a rich mess of food for plants; while the lime, its other component part, is left behind to ameliorate the soil. Never be afraid of using a little gypsum, then, either as a top dressing for herbage, or mixed with manure, it will not be lost, but act a most important part in fertilization.

"As a dog fed on jelly alone will die—so may plants fed on the richest manure, if the specific ingredients they require be not present."

Top dressing of soot and salt.—Soot containing salts of ammonia, must act beneficially. Salt is ever required both by animal and vegetable, it may so happen, however, that the soil contains it in sufficient abundance, when cattle are well supplied with this condiment, it is received into the soil where they tramp over; or near the sea coast, the salt water spray may saturate the soil to some distance with salt. In applying these dressings, or indeed any kind of fertilizing agent, you must estimate, from observation and enquiry, whether the soil may not already contain a sufficiency of it. Suppose that winter wheat may have been sufficiently boned, then, an application of bones in phosphated tank liquid would be useless.

MANGEL WURZEL.

Seed sown, from 3 to 5 lbs. in drills, per acre.

Select new seed, old will seldom vegetate, from the middle of April to the middle of May—drill, or dibble three seeds in a hole, three inches deep, let the rows be from 20 to 24 inches apart, and the plants twelve inches distant, in the row, manure well, the plant is a great feeder.

"Portable manures of great strength in small compass."—Prideaux.

Let all plants have suitable food.—Chemical analysis informs us that in the wheat plant, among many other inorganic substances, there is one prevailing in the grain, phosphate of lime, "bone ash," another in the straw containing much potash. We must, therefore, let the plant have such things in its food. They are largely contained in the following artificial mixtures, which have been recommended as top dressings for wheat; from experiments made with them and other substances, it would appear, that in general they have been found to answer best, and the results have evinced a beautiful accordance between chemical theory and actual experience.

Where the phosphate of lime (bone ash) has been drawn from the soil and sent away from the farm in fat cattle, milk, cheese, &c., as in certain grazing countries, and where a sufficient restoration of it has

April.

Week commencing Monday, April the 22nd, 1844.

Sussex.

MONDAY—*Willingdon School.* Boys digging ground, planting mangel wurzel, the rows two feet apart, and the plants one foot distant. *Eastdean School.* Eight boys digging, planting potatoes, hoeing peas, and planting beans among the potatoes. *Piper.* Hoeing peas; the dry weather will assist you to kill the rubbish. *Dumbrell.* Planting potatoes.

TUESDAY—*Willingdon School.* Boys digging, and planting mangel wurzel. *Eastdean School.* Boys planting potatoes, hoeing peas, preparing ground for turnips and mangel wurzel. *Piper.* Planting potatoes. *Dumbrell.* Planting potatoes.

WEDNESDAY—*Willingdon School.* Boys digging, and planting mangel wurzel. *Eastdean School.* Boys cleaning out tank, and piggery, cutting and mixing straw and carrots together for the cows. *Piper.* Pulling turnips, and planting potatoes, where they grew, using solid manure. *Dumbrell.* Digging, dibbling mangel wurzel, and planting potatoes.

THURSDAY—*Willingdon School.* Boys digging, and planting mangel wurzel. *Eastdean School.* Boys hoeing the wheat, planting potatoes, and manuring them with tank liquid, chopping straw and carrots together. *Piper.* Drawing out manure; dig my ground in the *morning*, and plant in the *afternoon*. *Dumbrell.* Digging, drilling tares.

FRIDAY—*Willingdon School.* Boys digging, and planting mangel wurzel. *Eastdean School.* Boys hoeing wheat, digging and planting potatoes, manuring with liquid as an experiment. *Piper.* Planting potatoes. *Dumbrell.* Digging, spearing potatoes.

SATURDAY—*Willingdon School.* Boys sowing a piece of Lucerne, in drills, *one foot* apart. *Eastdean School.* Boys cleaning up the pigs, the garden, and planting there, rolling oats and tares, cleaning pails and school room. *Piper.* Planting potatoes. *Dumbrell.* Digging.

Yorkshire.

Operations during the Week.

Slaithaite School. From eight to eleven boys at afternoon labour, drawing ashes, &c., spreading on the oats, harrowing, gathering clods, and rolling. *C. Varley,* gathering roots, planting cabbages, planting potatoes, and preparing turnip ground. *John Bamford,* preparing ground for turnips and tares, sowing and covering tares, preparing ground for Scotch cabbages.

COW-FEEDING.

Willingdon School. Cows fed on rye and a little hay in the stall.

Piper's. On turnips and rye, mixed with a little hay.

Dumbrell's. One cow fed till Wednesday with turnips, mangel wurzel, and straw; afterwards, on potatoes, mangel wurzel, and straw. One cow and heifer stall fed till Wednesday with turnips, carrots, and straw; cow afterwards grazed in the pasture, heifer stall fed with turnips, potatoes, and straw.

NOTES AND OBSERVATIONS.

not been made by boning, or by applying human faeces, or other plant food,—top dressings like the following may be of use.

Take, sulphate of ammonia, *gas salt*, $\frac{1}{2}$ cwt.—bone dust, 4 cwt.—wood ash charcoal, 5 cwt. *Vide p. 69.*

Another.

Take, nitrate of soda, 1 cwt.—gypsum, 2 cwt.—bone dust, 3 cwt.

Another.

Take, nitrate of potash, saltpetre, 1 cwt.—gypsum, 2 cwt.—bone dust, 3 cwt.

Mix the ingredients well together after the salts have been reduced to fine powder, using plenty of mould or ashes. Apply the mixture to one acre of your sickly or patched wheat.

No. 2.

When the land has been moderately sustained with both liquid and solid manure

Take, 5 cwt. of rape dust, which apply to one acre of wheat; when other substances might fail, it may have a special effect.

No. 3.

When the liquids for a long period may have left the farm yard and joined the river

Take soot 10 bushels, salt 5 cwt., mix them well with coal-ashes, and apply to one acre. *Mem.*—A dressing of a few cwts. of salt, may do good if applied with the above top dressings, especially if the cattle have not been well supplied with salt, wherewith to furnish the green pastures previous to the corn crops. This almost universal condiment is not more requisite for men and cattle than for plants. The spray from the sea will keep up, however, a continual supply of it for some distance from the coast.*

* Present price of these saline manures.—Rape dust, £6 6s. per ton; gypsum, £1 10s. per ton; nitrate of soda, 15s. per cwt.; saltpetre, 16s. per cwt.; guano, 10s. per cwt.; muriate of ammonia, £1 to £1 4s. per cwt.; chloride of calcium, 6s. per cwt.; soda, 14s. to 16s. per cwt.; oil of vitriol, 1½d. per lb.; sulphate of soda, 6s. per cwt.; sulphate of ammonia, £1 per cwt.

April.

Week commencing Monday, April the 29th, 1844.

Sussex.

MONDAY—*Willingdon School*. Boys digging up the ground as the rye is removed, and planting potatoes. *Eastdean School*. Boys digging, and planting potatoes, hoeing carrots, sorting potatoes, hoeing peas, and gathering weeds. *Piper*. Preparing turnip ground, making it as fine as possible. *Dumbrell*. Digging, heifer carrying dung.

TUESDAY—*Willingdon School*. Boys digging rye stubble, planting potatoes. *Eastdean School*. Boys digging, planting potatoes, sowing carrot seed, gathering weeds, sorting potatoes. *Piper*. Preparing turnip ground. *Dumbrell*. Digging, and planting mangel wurzel seed.

WEDNESDAY—*Willingdon School*. Boys digging rye stubble, for potatoes. *Eastdean School*. Boys emptying tanks, and applying liquid to the ground for mangel wurzel, breaking clods. *Piper*. Planting potatoes. *Dumbrell*. Digging, harrowing, and rolling fallow.

THURSDAY—*Willingdon School*. Boys digging rye stubble for turnips. *Eastdean School*. Boys digging and sowing carrot seed, manuring with tank liquid, weeding wheat, clearing roots and stones. *Piper*. Drawing manure for potatoes. *Dumbrell*. Digging, planting mangel wurzel seed, heifer carrying dung.

FRIDAY—*Willingdon School*. Boys digging rye stubble, carrying manure for swede turnips. *Eastdean School*. Boys thrashing and cleaning oats, breaking clods, gathering roots. *Piper*. Preparing manure for potatoes. *Dumbrell*. Digging, turning dung, carrying with the heifer.

SATURDAY—*Willingdon School*. Boys digging rye ground. *Eastdean School*. Boys planting potatoes, cleaning piggery, portable pails, and school room. *Piper*. Planting potatoes: “if I only half do my work I must expect only half a crop.” *Dumbrell*. Digging.

Yorkshire.

Operations during the Week.

Slaithwaite School. Draining. *James Bamford*, planting potatoes, forking up, and weeding. *John Bamford*, planting cabbages, preparing ground, and ridging it for turnips.

COW-FEEDING.

Willingdon School. Cows fed on rye and a little hay. *Dumbrell's*. One cow stall fed with rye till Friday, afterwards with turnips, potatoes, and hay. Another cow grazed in the pasture. The heifer stall fed with potatoes, and hay.

NOTES AND OBSERVATIONS.

No. 4.

The great land medicine, for a general deficiency of manure.

Take, guano 3 cwt., beat it into the finest dust, mix and sieve it repeatedly along with ten times its bulk of fine coal or peat ashes, apply the dose to one acre.

Take, the dung of domestic fowls and do the same, but in larger proportions.

Early sown White Turnips.—Consider well whether your supply of green food will be sufficient for the months of October and November, and if you have any doubts upon it, ensure that supply by sowing *quick growing white turnips* early in the spring, to be eaten in the fall by your cattle.

"The introduction of a single plant, the potatoe, from another hemisphere, has more than doubled the power of this country to support its inhabitants. An acre of potatoes will supply food sufficient for the support in healthful existence, of a family of six human beings for one year."—*Prize Essay of the Highland Society.*

Potatoe food.—Among other inorganic substances the potatoe plant appears to be especially fond of *potash*, but soda being very much akin in many respects, it may become the substitute of potash. The plant doubtless would prefer *potash*, but if absent, will content itself with soda. These substances you will perceive are contained in the artificial mixture below described, (No. 2.).

Guano per acre for potatoes.—Guano also may be substituted, when really good, for the manure of the farm yard, in this crop. Mix well four or five cwt. of guano, after pounding it to the finest dust, with eight or ten times its bulk of wood-ash charcoal, peat charcoal, potash compost, or clay compost, and apply the mixture above the seed, interposing a slight thickness of earth, and cover up as usual.

Professor Johnstone's used alone, for one acre of potatoes.

No. 1.

Take common salt $1\frac{1}{2}$ cwt., wet lime (old) 5 bushels, mix them well together, and let them remain a week.* Then add 20 bushels of wood-ash charcoal (page 59), sulphate of soda $\frac{1}{2}$ cwt. sulphate of magnesia $\frac{1}{2}$ cwt., sulphate of ammonia 1 cwt., peat or saw dust 1 ton, coal tar, or *gas water*, 20 gallons, work all well together.

This mixture, No. 1, as well as the guano, is placed above the seed, with only a thin layer of earth interposed, and covered with a moderate thickness of soil.

* The "Potaah Compost," page 63, will be well adapted, when mixed with a further quantity of potash and lime, for this purpose.

May.

Week commencing Monday, May the 6th, 1844.

Sussex.

MONDAY—*Willingdon School.* Boys digging and manuring for potatoes after rye. *Eastdean School.* Ten boys digging, and planting potatoes, hoeing the forward ones, and weeding. *Piper.* Planting potatoes. *Dumbrell.* Dibbling mangel wurzel seed, digging.

TUESDAY—*Willingdon School.* Boys digging and manuring. *Eastdean School.* Planting potatoes, sowing carrot seed, hoeing tares, picking up the weeds for pigs and cows. *Piper.* Drawing manure to the ground where rye has just come off. *Dumbrell.* Dibbling mangel wurzel seed, and digging.

WEDNESDAY—*Willingdon School.* Boys digging and manuring. *Eastdean School.* Boys emptying tanks, and peuring liquid along the drills, chopping sods, and preparing for turnips. *Piper.* Digging rye stubble, mowing tares for soiling, *above three feet long.* *Dumbrell.* Dibbling mangel wurzel seed, and digging.

THURSDAY—*Willingdon School.* Boys digging and manuring for potatoes after rye. *Eastdean School.* Boys digging rye ground, planting potatoes upon it, gathering stubble, and laying it in the trench. *Piper.* Planting potatoes. *Dumbrell.* Digging rye stubble, placing mangel wurzel seed.

FRIDAY—*Willingdon School.* Boys digging rye stubble, and manuring for potatoes. *Eastdean School.* Boys planting potatoes, thrashing oats, cleaning piggery, and mixing the dung with mould. *Piper.* Planting potatoes; always watching my five pigs, which I feed on boiled potatoes and pollard. *Dumbrell.* Drilling tares, cutting potatoes, and digging.

SATURDAY—*Willingdon School.* Hand weeding wheat. *Eastdean School.* Boys thrashing and cleaning oats, digging, cleaning out portable pails, school room, and tank. *Piper.* Digging rye stubble. *Dumbrell.* Planting potatoes.

Yorkshire.

Operations during the Week.

Staithwaite School. Boys finished draining, preparing ground for turnips, rolling oats.

COW-FEEDING.

Willingdon School. Cows fed on green tares once a day, and green clover the other.

Dumbrell's. One cow grazed in the pasture, and fed in the stable.

morn and even with rye grass. One cow stall fed with potatoes and hay till Wednesday, afterwards, grazed, and fed in the stall morn and even with rye grass. Heifer stall fed with potatoes and hay.

NOTES AND OBSERVATIONS.

No. 2.

Saw dust 40 bushels, potash mixed with lime 14 months old 10 bushels, common salt 168lbs., sulphate of ammonia 1 cwt., sulphate of soda 56lbs., sulphate of magnesia 56lbs., coal tar or gas water 20 gallons.

Turn the mixture well over, keep it dry, and allow it to ferment one month; then strinkle it at the bottom of the drills, and place down the potato sets, covering as usual.

In applying any of these artificial mixtures, you must not expect them to remain long in the soil to the promotion of following crops. The expense of the applications is small—they act with energy—they come back to you quickly, in the form of vegetables, and therefore a frequent renewal will be requisite.

LUCERNE.

Seed sown, 20 to 24 lbs. to the acre.

The best time of sowing is from the latter end of April to the middle of May. The soil ought to be light and dry, well tilled and mixed, not strong, stony, or clayey, neither inclined to be wet, nor spongy, with a chalk or sandy sub-soil, perfectly clean, and especially from couch grass. Fork the land over, going two spits deep, with a carrot fork, its prongs 16 inches long, a little flattened. Dig in plenty of good farm yard manure. Open drills with the hoe, 16 or 17 inches apart, and two inches deep, not more, fit a quill into a hole, pierced through a cork, which, fit in the neck of a wine bottle dry in the inside. Put your seed into the bottle and scatter it out through the quill in proper quantity, within and along the drills, which cover lightly. This crop ought to be well manured in January, February, or beginning of March, avoiding the use of lime. The grand secret, however, in its cultivation, is in the cleaning of it, by frequent hoesings between the rows.

TURNIPS.

Seed Sown, 1½ lbs. per acre, either in drills, or broadcast.

If you would have good meat, and sound.

Ensure good turnips on your ground.

Time of Sowing Turnips is approaching.—As a general rule, turnips may with advantage be sown at an earlier period in the north than would be suitable for the same species, with other circumstances equal, in the south of England. In the East Riding of Yorkshire it is common to commence sowing swedes the second week in May,

May.

Week commencing Monday, May the 13th, 1844.

Sussex.

MONDAY—Willingdon School. Boys digging and manuring ground for swede turnips, setting potatoes after tares. **Eastdean School.** Boys digging and manuring ground for carrots, hoeing tares, and gathering roots and weeds. **Piper.** Emptying the tank, and mixing liquid with ashes, using this mixture for turnips; *the fly has never meddled with them.* **Dumbrell.** Planting potatoes.

TUESDAY—Willingdon School. The same as yesterday. **Eastdean School.** Boys digging, planting potatoes, hoeing forward ones, and tares, collecting roots and weeds. **Piper.** The same as yesterday. **Dumbrell.** Setting potatoes, and digging.

WEDNESDAY—Willingdon School. Boys digging and manuring for swedes. **Eastdean School.** Boys digging and dibbling mangel wurzel, pouring tank liquid along the drills. **Piper.** Sowing turnips; doing it in June will not answer at Beachy-head, whatever it may do in a richer soil. **Dumbrell.** Digging.

THURSDAY—Willingdon School. Boys digging, &c., for swedes. **Eastdean School.** Preparing ground for turnips, hoeing tares, and putting chalk among the tares and wheat. **Piper.** Cleaning piggery; their urine probably a preventative against the attack of the fly. **Dumbrell.** Digging.

FRIDAY—Willingdon School. Boys digging, &c., for swedes. **Eastdean School.** Boys preparing for turnips, rolling the barley, sorting potatoes, and housing them. **Piper.** Sowing turnips. **Dumbrell.** Digging.

SATURDAY—Willingdon School. Boys breaking clods, the ground very dry. **Eastdean School.** Boys digging, and sowing garden with lucerne seed, manuring with tank liquid. **Piper.** Seeking about for mould, planting cabbages, earthing up beans. **Dumbrell.** Digging.

Yorkshire.**Operations during the Week.**

Slaithwaite Tenants. John Bamford, cleaning about, and conveying roots to mix with tank liquid.

COW-FEEDING.

Willingdon School. Cows stall fed on winter tares and green clover.

Dumbrell's. Two cows fed in the stall with Italian rye grass, afterwards grazed in the pasture, and fed morn and even with Italian rye grass. Heifer stall fed with potatoes and hay.

NOTES AND OBSERVATIONS.

and to finish white turnips by the 21st of June. In Suffolk it is usual to commence sowing swedes near the end of May, and white turnips a month later. The effect, however, of difference in latitude is partially counteracted by a greater or less degree of elevation, as well as by a difference of soils where other things are equal.—*Mr. Almack.*

Your turnips will be small and spare,
If you deprive them of fresh air.

Distance of Swede Turnips.—They require plenty of air and space. They may be sown on ridges 27 inches apart if the land be stiff and tenacious, if, on the contrary, it be loose and friable, they may be drilled on the level. Keep away from the sides near the hedge-rows, reserving side lands and shady places for your whites, or yellow bullocks. Swedes require deeper soil, richer land, and more manure than white turnips.

Distance of White Turnips.—Many farmers prefer having the rows, some less, others about 22 inches, because they are better to clean, and because if placed at 27 inches the shepherd may have to remove his net too often when the sheep are eating them.—*Vide Mr. Almack's Prize Essay.*

Their roots extend both far and wide,
Conveying food from every side.

Size of Turnips.—The more distant your turnips are in the drill, and the further these drills are from each other, the larger will be your turnips, as Mr. TULL has beautifully demonstrated. It is a point, however, that has been much contested; learn from experience to pitch yours at the best distance, and perhaps the mean distance will not be very far from the true one. “A large weight” says Mr. ALMACK, “cannot be produced but from large bulbs. Thus a turnip eight inches across is equal in bulk to eight turnips four inches across; while a turnip twelve inches across is equal in bulk to twenty-seven turnips which are four inches across.” But the twenty-seven small ones, it is probable, may be far superior to the large one in nutritive matter, a point that you ought carefully to ascertain from experiment.

Soils light upon the level sow,
Soils heavy ridg'd up in the row.

Drilling Turnips on the level.—In the light lands, with a chalk sub-soil, of the Yorkshire Wolds, during a very dry summer, whole fields of turnips drilled upon ridges failed, while adjacent ones drilled upon the level bore a good crop. From such experience, and after much consideration, Mr. ALMACK says, that for white as well as swede turnips on thin and dry soils generally, the balance of probable advantage appeared to be in favour of the level system.—*Journal of the R. A. Society of England.*

May.

Week commencing Monday, May the 27th, 1844.

Sussex.

MONDAY—*Willingdon School.* Boys have a week's holyday, master weeding potatoes. *Eastdean School.* Boys digging, and sowing turnips, hoeing potatoes, watering carrots and cabbages. *Piper.* Cleaning out the pigs, and mixing well with mould. *Dumbrell.* Rolling fallow.

TUESDAY—*Willingdon School.* Master hoeing wheat. *Eastdean School.* Boys a holyday, myself mowing clover, and turning a mixen. *Piper.* Composting manure from the pigs with mould and plenty of liquid manure. *Dumbrell.* Wheeling out manure, and spreading.

WEDNESDAY—*Willingdon School.* Master hoeing wheat. *Eastdean School.* Boys digging, and sowing turnips, hoeing carrots and parsnips, watering them, gathering roots and stones. *Piper.* Planting potatoes. *Dumbrell.* Sowing turnips, and rolling them.

THURSDAY—*Willingdon School.* Master earthing up potatoes. *Eastdean School.* Boys emptying tank, digging, watering ground, and planting cabbages, hoeing potatoes. *Piper.* Planting potatoes and beans. *Dumbrell.* Wheeling out, and spreading manure.

FRIDAY—*Willingdon School.* Master earthing up potatoes. *Eastdean School.* Boys turning clover, hoeing potatoes, gathering weeds, weeding tares and oats, taking weeds to the pigs. *Piper.* Hoeing carrots. *Dumbrell.* Sowing turnips, and rolling them in.

SATURDAY—*Willingdon School.* Master digging tare ground for potatoes. *Eastdean School.* Turning up mould, emptying privy pails upon it, cleaning piggery and school room, watering lucerne. *Piper.* Hoeing onions. *Dumbrell.* Paring off clover stems.

Yorkshire.

Operations during the Week.

Slaithegate School. Eleven boys, for afternoon labour, preparing ground for turnips, harrowing, drilling, and sowing turnips, hacking roots, and gathering. *John Bamford,* earthing cabbages, digging between potatoe rows.

COW-FEEDING.

Willingdon School. Cows stall fed with tares and clover.

Dumbrell's. Two cows grazed in the pasture during the day, stall fed morn and even with italiian rye grass. Heifer stall fed with tares and rye.

Slaithegate School. Cow fed in the stall with tares and rye.

NOTES AND OBSERVATIONS.

In Aid of Farm Yard Manure.

Application No. 1.

Domestic Guano.—The dose described pages 55 and 57, containing 1 bushel of bones, will suffice for half an acre; but wood-ash charcoal, instead of coal ashes, would be better in fabricating the domestic guano for this purpose.

No. 2.

Native Guano.—Mix 2 cwt. of finely pounded guano with 18 bushels of wood-ash charcoal, or if you have none, with $\frac{1}{2}$ a ton of coal ashes, or mould.

Place the manure in the drills, scatter the mixture upon it by hand, close in the drills, and sow in the usual manner.

No. 3.

Bone Dust.—Drill under the seed 4 cwt. to the acre, after the manure is placed in the drills.

No. 4.

Rape Dust.—Drill near the seed, not in contact, about 6 bushels per acre, after the manure is placed within the drills.

No. 5.

Artificial Mixture.—For one acre, take gypsum 1 cwt., sulphate of ammonia 30 lbs., nitrate of soda 20 lbs., mix well together, and scatter the mixture upon the manure when placed in the drills.

No. 6.

Artificial Guano.—Apply the mixture described page 59, after the rate of 132 lbs. per acre.

Barochan Guano.—Also the mixture described page 59, after the rate of 4 cwt. per acre.

* * * In applying the above substances, estimate their cost, and reduce the usual quantity of farm yard manure in proportion. Consider, before applying them, which may be requisite, and choose one or other, according to previous manurings: for instance, if boning may have been ample in preceding years, rape dust may be preferable, and vice versa, &c. &c.

Turnip seed.—That which is new comes soonest, therefore it may be well to imitate Mr. TULL, by mixing new seed with old, so that the plants coming at different times may chance to escape the fly.

water, has been tried in different parts of this country as a substitute for dung. I have been kindly presented by R. W. PURCHAS, Esq. of Chepstow, in Monmouthshire, with a treatise giving a detail of his own, and a summary of many experiments that have been made by others, which shew the extraordinary value of the application. Without acquiescing entirely with M. LIEBIG, that 40 lbs. of bones so decomposed may be sufficient for an acre of turnips, we must acknowledge that the experiments of the DUKE of BACON, MR. LAWS, MR. PURCHAS, and others, prove decisively, that from $3\frac{1}{2}$ to 6 bushels of dissolved bones, have produced greater crops than a large quantity of farm yard manure, and shew a greater energy of action than a much greater quantity of bone dust.

June.

Week commencing Monday, June the 3rd, 1844.

Sussex.

MONDAY—*Willingdon School.* Boys digging, and manuring for potatoes after tares. *Eastdean School.* Boys digging, sowing turnips, watering them with liquid manure, planting potatoes and cabbages for winter. *Piper.* Hoeing amongst the potatoes. *Dumbrell.* Weeding oats.

TUESDAY—*Willingdon School.* Boys digging, manuring, and planting potatoes after tares. *Eastdean School.* Boys rolling barley and oats, weeding peas, hoeing potatoes and carrots, sowing the garden with lucerne. *Piper.* Setting potatoes. *Dumbrell.* Weeding tares, paring off clover stems.

WEDNESDAY—*Willingdon School.* Boys planting potatoes after tares. *Eastdean School.* Boys emptying pails, and mixing the contents with mould, weeding tares, and getting forward potatoes. *Piper.* Hoeing and mending lucerne; had but one slight shower of rain this three months at Eastdean. *Dumbrell.* Paring clover stems, burning, and digging.

THURSDAY—*Willingdon School.* Boys planting potatoes. *Eastdean School.* Boys digging, planting potatoes, planting cabbages after rye, and mending with liquid. *Piper.* Digging where the tares grew, and setting potatoes. *Dumbrell.* Paring clover stems, and digging.

FRIDAY—*Willingdon School.* Boys digging the second time for turnips. *Eastdean School.* Boys sowing turnips between the carrots, transplanting turnips, hoeing mangel wurzel, weeding oats and barley. *Piper.* Setting potatoes. *Dumbrell.* Paring clover stems, digging, and spreading ashes.

SATURDAY—*Willingdon School.* Boys digging the second time for turnips. *Eastdean School.* Boys hoeing potatoes, cleaning out pigs, pails, and school room. *Piper.* Emptying the tank, and mixing liquid with dung and mould. *Dumbrell.* Digging.

Yorkshire.**Operations during the Week.**

Slaithwaite School. From nine to ten boys breaking sods, burning wicke, making a tank. *C. Varley,* carrying manure, ridging for turnips, and sowing them. *James Bamford,* sowing tares, preparing for turnips, earthing potatoes. *John Bamford,* delving, liming cabbages.

COW-FEEDING.

Willingdon School. Cows fed on tares and clover.

Dumbrell's. Two cows grazed in the pasture the whole week,

stall fed morn and even on tares till Wednesday, afterwards with clover. Heifer stall fed on tares.

Slaithwaite School. Cow stall fed on rye and tares. C. Varley's, on mown grass.

NOTES AND OBSERVATIONS.

Turnip drilling.—Drill in with your seed as many coal or wood ashes as you can get, you will find such a mixture a good stimulant for the young plant, and a preservative against the grub.

Turnip climate.—A cool and temperate climate is best for the turnip, and it attains to a larger size in the north than in the south of England.

Feeding properties of the turnip.—VON THAER says, that 100lbs. of turnips are equal to 22lbs. of hay, and an ox to get fat on turnips ought to have one-third of its weight daily.

“A pint of urine will raise a pound of corn, and forty-eight gallons a quarter of wheat.”

Top dressings on Spring Corn.—Early in May or when the spring corn is well braided, you may apply top dressings with good effect, in many, if not in all cases. The domestic guano, the natural guano, phosphated tank liquid, as auxiliaries to manure, or applied as top dressings, can never come amiss for any kind of crop, and saline or chemical manures may be used, when your supply of home made dressings is not sufficient.

Top dressing for Spring Wheat.—Apply the same substances as before directed for winter wheat, and in precisely the same manner.

Top dressing for oats.—Also apply similar dressings, but perhaps, you may use with advantage more common salt, and omit rape dust, as well as soot, which seem to be more especially requisite for the wheat, than any other of the corn plants.

Or, apply 1 cwt. of dissolved bones, sulphate of soda 1½ cwt., nitrate of soda 1¼ cwt.—Gardiner.

Top dressings for Barley.—The same substances appear to be requisite for this plant, but the following results of experiment will direct you in regard to appliances for this crop. At Barochan, in Scotland, Mr. GARDINER, overseer of Mr. FLEMMING, sowed, on the 14th of April, 1842, common white barley, it was top dressed in the beginning of May, as follows:—with

Nothing,	the produce per rood was	650lbs. of corn.
Saltpetre, 28lbs. at a cost of 7s. 0d.	the produce was	779lbs. of do.
Common salt, 84lbs.	1 1½ "	756lbs. of do.
Nitrate of soda, 21lbs. }	4 0½ "	782lbs. of do.
Common salt, 28lbs. }	18 9 "	864lbs. of do.
Guano, 84lbs.		
Lime and salt, with dissolved bones, 84lbs.	7 6 "	840lbs. of do.

June.

Week commencing Monday, June the 10th, 1844.

Sussex.

MONDAY—*Willingdon School.* Boys digging for potatoes after tares. *Eastdean School.* Boys digging, sowing white turnips, watering, picking off weeds and stones. *Piper.* Gathering flints. *Dumbrell.* Digging, spreading ashes, sowing turnips, and mixing dung and mould.

TUESDAY—*Willingdon School.* Boys digging for potatoes, and turnips after tares. *Eastdean School.* Boys hoeing potatoes, gathering weeds for the pigs, turning over a mixen for wheat. *Piper.* Hoeing carrots. *Dumbrell.* Digging up tare ground, hoeing carrots.

WEDNESDAY—*Willingdon School.* Boys digging for turnips and potatoes after tares. *Eastdean School.* Boys emptying privy pails, nipping the blossom from potatoes, and thinning carrots. *Piper.* Drawing litter to the piggery, and mixing it with mould. *Dumbrell.* Mixing dung and mould.

THURSDAY—*Willingdon School.* Boys planting potatoes. *Eastdean School.* Boys digging between potatoes, hoeing forward turnips, planting and manuring cabbages for winter. *Piper.* Turning the mixen. *Dumbrell.* Digging up tare ground, manuring and hoeing carrots.

FRIDAY—*Willingdon School.* Boys earthing up potatoes. *Eastdean School.* Boys weeding wheat and oats, hoeing peas, and pouring tank liquid between the drills. *Piper.* Hosing potatoes. *Dumbrell.* Digging up tare ground, and hoeing carrots.

SATURDAY—*Willingdon School.* Boys emptying the tanks. *Eastdean School.* Boys cleaning piggery and pails, watering carrots, and cleaning up. *Piper.* Hoeing onions. *Dumbrell.* Mowing clover for hay.

Yorkshire.

Operations during the Week.

Slaithwaite School. From ten to twelve boys drilling turnips, sowing broadcast, digging the tare ground, have planted 300 cabbages and watered them, with twelve rows of turnips. *C. Varley,* manuring for and sowing turnips, mixing peat earth with manure.

COW-FEEDING.

Willingdon School. Cows fed in the stall on tares and clover.

Dumbrell's. Two cows stall fed with clover.

NOTES AND OBSERVATIONS.

Top dressing for Beans.—Nitrate of soda $1\frac{1}{2}$ cwt., sulphate of soda $1\frac{1}{2}$ cwt.—*Gardiner.*

* * Observation by MR. GARDINER, "From what has been observed, both in this and former seasons, all dressings and manures containing a large percentage of nitrogen, such as rape dust, sulphate and muriate of ammonia, nitrate of soda, &c. make the grain grown by them, lighter in weight per bushel, while at the same time, they give more bushels per acre as well as more straw. On the other hand, such dressings and manures as common salt, sulphates of soda and magnesia, and bone dust, invariably give heavier grain per bushel, but fewer bushels per acre. Now it appears from this, if the same be found good in other places, that the most judicious and economical method is to use a mixture of these, as common salt with nitrate of soda, or any of the others. The one will give quantity the other weight; because not one of the dressings enumerated above, except guano, contain all the ingredients required for the food of plants."

Transplanting potatoe shoots.—When there are breaks or intervals in your potatoe rows, proceed as follows. Take up, by the fork, a few of the neighbouring sets with care, and remove all the shoots from each set, except one, restore it and its single shoot to the place it was taken from, and carefully plant the shoots removed from such set, in a coiling form, in the interval where the plants have failed, leaving only the top above the soil. They will grow and produce abundance of tubers.

"Saltpetre increases the vital action in man; it doth the same in plants."

Top dressing potatoes.—After the breaks or intervals in the rows are filled up, the application of saline top dressings will naturally commence. The following are the best mixtures for such purpose, and are deduced from the results of numerous trials which have been ingeniously tabulated by Professor JOHNSTONE. They may be applied to the crop, when the plants are five or six inches high, by scattering them upon the ridges, previous to a shower of rain.

For one acre of manured potatoes.

No. 1.

Saltpetre, $\frac{1}{2}$ cwt.; sulphate of soda, $\frac{1}{2}$ cwt.; sulphate of magnesia, $\frac{1}{2}$ cwt.

No. 2.

Saltpetre, $\frac{1}{2}$ cwt.; gypsum, 1 cwt.; salt, 1 cwt.; sulphate of magnesia, $\frac{1}{2}$ cwt.

No. 3.

Nitrate of soda, $\frac{1}{2}$ cwt.; gypsum, 1 cwt.; wood-ash-charcoal, 30 bushels; salt-pan bittern, 20 gallons.*—*Vide Mr. Prideaux's Paper in the Farmers' Magazine.*

"Hoe your turnips while and whenever the sun shines."

Top dressings for turnips.—Hoe early to frighten away the fly,

* Salt-pan bittern, at the salt works, 1*l* $\frac{1}{2}$ d. per gallon; sulphate of magnesia, 12*s.* per cwt.; nitrate of soda, £1 4*s.* per cwt.

June.

Week commencing Monday, June the 17th, 1844.

Sussex.

MONDAY—*Willingdon School.* Boys sowing white turnips where the mangel wurzel missed. *Eastdean School.* Boys mowing clover for hay, digging between and earthing potatoes, and nipping off the blossoms. *Piper.* Hoeing potatoes. *Dumbrell.* Cutting up tare stubble to put in the pig-pound.

TUESDAY—*Willingdon School.* Boys sowing white turnips as yesterday. *Eastdean School.* Boys hoeing forward turnips, transplanting some, and preparing ground for cabbage. *Piper.* Driving mould to the mixen. *Dumbrell.* Digging up tare ground, and planting cabbages.

WEDNESDAY—*Willingdon School.* Boys hoeing among the potatoes. *Eastdean School.* Boys emptying pails, planting cabbages, and pouring tank liquid around them. *Piper.* Emptying the tank liquid on the mixen. *Dumbrell.* Hoeing potatoes, and digging rye grass.

THURSDAY—*Willingdon School.* Boys digging for white turnips. *Eastdean School.* Boys turning clover, hoeing mangel wurzel and potatoes, and picking blossom. *Piper.* Digging up tare ground, and pouring all the liquid I can get upon it. *Dumbrell.* Hoeing potatoes, and digging up rye grass.

FRIDAY—*Willingdon School.* Boys hoeing and weeding carrots. *Eastdean School.* Boys carrying clover hay, digging between the carrot rows, and picking weeds. *Piper.* Digging tare ground, and sowing turnips. *Dumbrell.* Cutting up tare stubble, stacking hay.

SATURDAY—*Willingdon School.* Boys hoeing and weeding carrots. *Eastdean School.* Boys thatching the hay-rick, cleaning out pails and piggery. *Piper.* Hoeing potatoes. *Dumbrell.* Digging up rye grass.

Yorkshire.Operations during the Week.

Slaithwaite School. Boys preparing rye and tare stubble, planting 1500 cabbages, digging, breaking clods, gathering roots. *C. Varley* weeding and hoeing potatoes, emptying tank, applying liquid to cabbages, emptying privy pails.

COW-FEEDING.

Willingdon School. Cows stall fed on clover.

Piper's. Cows stall fed on clover and lucerne, doing well.

Dumbrell's. Two cows stall fed with tares.

Slaithwaite School. Cows stall fed with tares and rye. *C. Varley's* fed on mown grass.

NOTES AND OBSERVATIONS.

and scatter top dressings upon the row to drug them, immediately before a shower, the hoe following soon after, will allow no peace to these pests, and introduce the saline mixtures forthwith into the ground.

No. 1.

After manure and guano, or guano alone.

Apply a dressing of $1\frac{1}{2}$ cwt. of gypsum to the acre.

No. 2.

After domestic, or natural guano and manure.

Apply nitrate of soda, $1\frac{1}{2}$ cwt., mixed with 1 cwt. of gypsum. Also, sulphate of ammonia, 56 lbs.

No. 3.

After rape dust and manure.

Apply $\frac{1}{2}$ cwt. nitrate of soda mixed with 1 cwt. of gypsum.

The author can speak with confidence and from experience, as to the efficacy of such manurings. The quantity of dung may be diminished in proportion to the value of the saline substances introduced before the seed, and in subsequent top dressings. Let all dressings be well mixed with abundance of coal ashes, to tickle, plague, and drive away insects.

"Nature at all times answers the questions that are put to her—and such questions are experiments."—*Liebig.*

Tentative Analysis.—Unless you are instructed by chemical analysis as to the composition of the soil, you cannot apply manure of any kind whatever to crops with unerring certainty; neither can you apply on all occasions for information to the expert analyst; but may you not cause a plant to assume his functions, and predict its own requirements? Suppose you wish to take a particular crop from your field—select an average space of two rods in such field—introduce the crop you wish to be afterwards grown there. By applying the various manures indicated above, in known quantities, to its different parts: may you not by a minute attention to the progress of the crop, find out what kind of manure will be acceptable, or the contrary? The year following, the whole field may be cropped with more, if not entire, certainty of success, with the same vegetable. I throw out the suggestion after having partially introduced it into practice, aware, however, that it can only be carried into effect in particular cases.

RAPE.

Seed Sown, 1 Peck broadcast—or, $\frac{1}{2}$ Peck of Rape, and $1\frac{1}{2}$ Peck of Rye.

This is a very valuable plant for soiling. When you have reason to fear that turnips sown after tares might not attain to proper size, substitute rape, it may be sown in drills and hoed, but for soiling,

June.

Week commencing Monday, June the 24th, 1844.

Sussex.

MONDAY—*Willingdon School.* Boys rolling and harrowing ground for swede turnips; a little shower. *Eastdean School.* Boys hoeing potatoes, and turnips, gathering weeds from the rows for the pigs. *Piper.* Digging tare ground. *Dumbrell.* Thatching hay stack.

TUESDAY—*Willingdon School.* Boys drilling in swede turnip seed, *Eastdean School.* Boys hoeing, digging, gathering roots and stones, breaking clods. *Piper.* Cleaning piggery, removing dung to the mixen. *Dumbrell.* Digging and drilling turnips, watering, gathering tare stubble for the cows to lie upon.

WEDNESDAY—*Willingdon School.* Boys drilling swede turnip seed. *Eastdean School.* Boys digging, mixing tank liquid with woad, and putting it into the drills, and sowing white turnips. *Piper.* Turning the mixen. *Dumbrell.* Digging, drilling turnips, watering, collecting stubble for cows to lie on.

THURSDAY—*Willingdon School.* Boys doing the same as yesterday; another little shower. *Eastdean School.* Boys digging, planting cabbages, bearing manure, and watering them. *Piper.* Digging tare ground. *Dumbrell.* Digging tare ground, cutting off turnip seed pods.

FRIDAY—*Willingdon School.* Boys digging in swedes. *Eastdean School.* Boys planting, and manuring cabbages. *Piper.* Digging. *Dumbrell.* Digging up tare ground.

SATURDAY—*Willingdon School.* Boys sowing white turnips, on failure of mangel wurzel crop. *Eastdean School.* Boys planting cabbages, weeding lucerne, cleaning pails, piggery, and school-room. *Piper.* Hoeing potatoes, studying how to get manure for next wheat season. *Dumbrell.* Wheeling out manure, sowing turnip seed in the tare ground for second crop.

Yorkshire.

Operations during the Week.

Slaithwaite School. Ten boys digging up tare ground, gathering roots. *C. Varley,* preparing ground for cabbages, manuring for swede turnips, digging, transplanting swedes, earthing potatoes.

COW-FEEDING.

Willingdon School. Cows stall fed on tares and clover.

Dumbrell's. Two cows stall fed with tares.

Slaithwaite School. Cows stall fed on tares and rye.

C. Varley's. Cows stall fed on peas and grass.

NOTES AND OBSERVATIONS.

sow it broadcast from June to September—The early sown, may be cut in November, and again in the following spring—The late sown, will stand over winter, and be the first green food in spring. A little rye mixed with it will be an improvement. Cows, like sheep, greatly relish this plant, neither does it communicate any ill taste to milk. Cut up the rejected woody stems and mix them with turnip or other mash. A crop of turnips may follow both, or winter wheat may follow those sown in June.

"Aunque no sea santo hace milagros."

"Guano though no saint works miracles.—Persian Saying.

To test the strength of Guano.—Procure a few ounces of fresh burnt lime-stone, reduce it to a fine powder, which introduce into a bottle perfectly dry in the inside; and keep it well corked for future use, renewing it frequently. Take a tea spoonful of each sample of guano you wish to test, which place in separate cups, and add a spoonful of water, then measure, with a dry spoon, the same quantity of quick lime into each cup, in a moment, stirring quickly, and the sample that gives the strongest smell of hartshorn is the best guano.

Hoe continually.—Your crops being now generally above the ground, your principal attention ought to be directed to keeping down the weeds by perpetual hoeing, and your turnips in particular must not be neglected. The triangular hoe made at Birmingham, is undoubtedly best adapted for turnip hoeing, and once cleaning of its three sides cleans three hoes, and the corners will nicely pick out the plants. Do not leave them too thick, and thus lose both in the quantity and quality of the crop. Where the rows are 27 inches apart, from 12 to 14 inches is near enough. Persons short in the back make the best turnip hoers, therefore, careful boys may be employed, very nice work it is too for young girls, may prevent many a consumption, and add to their bloom. After the hoe has performed its part, let the most promising plant be seized with one hand and the inferior ones removed with the other.

Treasplanting swedes.—Fill up all intervals in the ridges of your turnips, or failing places on broadcast lands, with swede plants. Let your planting stick never rest, keep its point to the root and insert the plant so firmly that it cannot be nipped up by a slight pull; and remember that the almost momentary act of placing a single plant, may be the means, without further care on your part, of providing 6 or 8 or 10 lbs. of solid food for your cow during dreary winter.

The Cottage Comforter, or Cow.—The most valuable breed for cottagers is perhaps the scotch or irish. They are more hardy than the higher breeds of cattle, and let it be the end, aim, and hope of

July.

Week commencing Monday, July the 1st, 1844.

Sussex.

MONDAY—*Willingdon School.* Boys digging, and manuring with tank liquid for white turnips after spring tares. *Eastdean School.* Boys digging, and planting cabbages, watering them, weeding and hoeing potatoes. *Piper.* Hoeing lucerne; hoe it deep. *Dumbrell.* Sowing soot and lime on the turnips, to drive away the fly, cutting up tare stubble.

TUESDAY—*Willingdon School.* Boys doing the same as yesterday. *Eastdean School.* Boys planting cabbages, manuring and watering, weeding mangel wurzel, cabbages, and turnips. *Piper.* Applying tank liquid to the lucerne. *Dumbrell.* Cutting tare stubble for litter, planting cabbages.

WEDNESDAY—*Willingdon School.* Boys digging, and applying tank liquid for white turnips after tares. *Eastdean School.* Boys emptying pigsty tank, sowing rape and tares for green food, hoeing potatoes. *Piper.* Hoeing potatoes; remove the bloom as you go on. *Dumbrell.* Transplanting mangel wurzel, cutting up rye grass.

THURSDAY—*Willingdon School.* Boys sowing white turnips and harrowing. *Eastdean School.* Boys hoeing potatoes, nipping the blossoms from them, weeding oats, and barley. *Piper.* Hoeing potatoes; do not break or bruise the haulm. *Dumbrell.* Earthing up potatoes, transplanting parsnips.

FRIDAY—*Willingdon School.* Boys digging, and applying solid manure for white turnips after spring tares. *Eastdean School.* Copious rain, boys in the school or plaiting straw, and learning to make bee-hives. *Piper.* Digging tare ground. *Dumbrell.* Earthing up potatoes, transplanting mangel wurzel.

SATURDAY—*Willingdon School.* Boys earthing up potatoes. *Eastdean School.* Boys transplanting potatoes, sowing white turnip seed, cleaning out piggery, portable pails, and school-room. *Piper.* Same as before. *Dumbrell.* Hoeing carrots, digging up tare ground, digging up rye grass.

Derbyshire.

Operations during the Week.

Slathwaite Tenants. C. Varley, sowing swede turnips, planting swedes, manuring for and planting turnips, mowing grass. John Bamford, weeding and hoeing swede turnips, earthing potatoes, and planting swedes.

COW-FEEDING.

Willingdon School. Cows fed on tares in the stall.
Dumbrell's. Two cows stall fed with tares till Friday, afterwards with clover.

C. Varley's. Stall fed on peas and grass.

NOTES AND OBSERVATIONS.

the cottager to get one of these valuable creatures if he can. Their milk is rich and yields a quantity of capital cream, neither are they dry so long as the larger breeds, which makes them valuable to a poor man. When once you do become possessed of one of these best gifts, use her kindly, keep her warm, and well littered with fern or straw, give her good seasoned and well salted food, as much water as she likes to drink, and often use the curry comb.*

"With health of body, innocence of mind, and habits of industry, a poor man's child ought to have nothing to be afraid of, nor his father or mother any thing to be afraid of for him.—*Dr. Paley.*

The Cow a School Mistress.—The cow at Eastbourne is quite looked up to as a school mistress, and it is believed that were it the case generally, "and boys were taught by such a mistress with horns and hoofs, the cost of the rural police—insurance of farm stock—and increased naval and military force would be useless in a time of peace." She teaches her owner to raise a variety of food, and root crops—which guards against the failure of any one crop in consequence of excessive drought or rain—her manure ensures abundance of bread to eat with butter and cheese. She gives us one of the most wholesome breakfasts of bread and milk. She finds food for the pig, which is afterwards to yield our more solid meals of dinner and supper, and the savoury fare of its offal. To the cow, we owe our veal and beef; to the ox, strong to labour, we owe the shoes which protect our feet, the woodman's leathern jacket, and harness for the horse. She teaches boys to raise crops for her use—to be kind and regular in their attendance on dumb animals, and not to stray from home;

"Are we diseas'd, the cure is known;
 Her sweeter juices mend our own."

By her, while making butter and cheese, girls are taught to be industrious and cleanly, and both boys and girls are taught not to pick and steal, lest their own cow should be stolen.

Cow in Harness.—*JESSE PIPER's* arguments in favour of it—"As I am myself a cripple and can draw none, so, by learning her to

* *Cow Clubs.*—Every village ought to have its Cow Club, and every farmer ought to support it. To extend these invaluable societies, *Mr. Kepp, Printer, Huddersfield*, will keep a supply of Rules ready printed, and on receiving a post paid letter, enclosing 4d. in post office stamps, will send a copy by post, free, or supply clubs wholesale at the lowest price.

July.

Week commencing Monday, July the 8th, 1844.

Sussex.

MONDAY—*Willingdon School.* Digging, and manuring with liquid for white turnips after spring tares. *Eastdean School.* Digging up tare stubble, planting, manuring, and watering cabbages. *Piper.* Taking up onions. *Dumbrell.* Hoeing carrots, cutting up rye grass.

TUESDAY—*Willingdon School.* The same as yesterday. *Eastdean School.* Boys digging up tare stubble, cutting up potatoes, weed-ing carrots, bringing weeds for the pigs. *Piper.* Taking up onions, removing them, and digging up the ground immediately. *Dumbrell.* Hoeing carrots, dibbling mangel wurzel, planting cabbages.

WEDNESDAY—*Willingdon School.* Boys digging, working among the potatoes. *Eastdean School.* Boys digging, and applying tank liquid, planting more cabbages, hoeing up potatoes. *Piper.* Digging where the onions came off. *Dumbrell.* Hoeing carrots, digging up tare ground.

THURSDAY—*Willingdon School.* The same as yesterday. *Eastdean School.* Weeding lucerne, watering it, sowing white turnips, transplanting small ones. *Piper.* Hoeing carrots. *Dumbrell.* Digging up tare ground.

FRIDAY—*Willingdon School.* Boys doing the same as before. *East-dean School.* Boys in school all day, can find nothing whatever for them to do. *Piper.* Hoeing carrots, am quite particular in removing all rubbish from them. *Dumbrell.* Wheeling manure, and sowing turnips on the tare ground.

SATURDAY—*Willingdon School.* Boys hoeing turnips. *Eastdean School.* Boys cleaning piggery, portable pails, school-room, and cutting tares for Sunday. *Piper.* Hoeing potatoes. *Dumbrell.* Hoeing potatoes, spreading tank liquid on the new mown clover.

Yorkshire.

Operations during the Week.

Slaithwaite Tenant. C. Varley, hay making, digging up tare ground for wheat.

COW-FEEDING.

Willingdon School. Cows fed in the stall with the second cut clover. *Dumbrell's.* Two cows stall fed with tares till Friday, afterwards with clover.

C. Varley's. Cows stall fed on grass.

NOTES AND OBSERVATIONS.

draw she performs my part. Some persons may say, does it not hurt the cow in her milk ? In the way that I do it, on the contrary, it does her good, for I never let her do a strike of work without paying her well for it. It would be a very hard thing if I could not afford her sixpenny worth of food, when she earns me two shillings, and that she will do in two hours, then, if I had not got the cow to do it, I must have hired a man, who would expect two shillings per day, and he could not in the whole day, draw up as much manure as my cow in two hours."

M. Valcourt's arguments.—In the french translation of the essay I have just read with much interest, I find Mr. BLACKER has touched the target at the circumference, but not at the centre, point blank ; he has only glanced at half the advantages to be derived by the small Irish farmer from the house-feeding of cows. The milk is an advantage ; the dung is still greater; but the third—which Mr. BLACKER has not mentioned—is the labour, though moderate, which the cow performs when harnessed with a collar—not with a yoke ; for two cows, harnessed either abreast or one before the other, will draw his horse hoe, his harrow, his roller, or dung-cart. A cottier who has only four, or even three acres, will have plenty of *fodder for two cows in the stable* to do his tillage, and draw his manure, his crop, and his firing. Mr. BLACKER will see, in the east and south of France, cows thus harnessed. In the south they are all yoked ; but in the east and in my province of Lorraine they have only a collar, which answers much better. It is true that a cow which works constantly eight or nine hours a day, stops giving milk ; but, provided she works only from two to four hours a day, and that not every day, and that she is *well fed*, she will give almost as much milk as if she did not work at all ; and she will give more milk after having a day's rest : and a cottier who has only four acres will not have occasion to employ two cows daily. When a pony rests, it does not bring any thing in ; whereas, when a cow rests, its milk increases. It has been observed in Lorraine, that cows are more active than oxen ; and that, harnessed with collars, they walk as quick as horses. The cottier, when he sees the work two young cows can do when kept in the stable all the year round, will take care to provide plenty of *good nourishment* for them both winter and summer ; for, when poorly fed, they neither can work well nor give plenty of *milk or manure* ; and a cow, with a suitable saddle, can carry considerable weight—for their legs are short and thick, and their spines strong.

But, to feed cows well, the cottier must, as soon as he has a yard of ground, vacant, dig it, manure it, and transplant on it (summer or winter) cabbages or other plants, according to the season ; and, at the same time, as much care must be taken of the dunghill as of the cow—for *manure is the foundation of all productive agriculture in Europe*. For this reason the cottier's wife should let nothing be

July.

Week commencing Monday, July the 15th, 1844.

Sussex.

MONDAY—Willingdon School. Boys hoeing swede turnips, and weeding potatoes. *Eastdean School.* Boys digging, hoeing potatoes and turnips, nipping potatoe blossom, gathering weeds for the pigs. *Piper.* Planting cabbages, watering them well. *Dumbrell.* Hoeing potatoes, digging up rye grass.

TUESDAY—Willingdon School. The same as yesterday. *Eastdean School.* Boys digging, planting cabbages, watering them with tank liquid, sowing white turnips. *Piper.* Planting cabbages; dont use tank liquid before they get rooting. *Dumbrell.* Hoeing turnips, digging up tare ground.

WEDNESDAY—Willingdon School. The same as before. *Eastdean School.* Boys planting cabbages, and manuring them. *Piper.* Hoeing potatoes; always hoe twice. *Dumbrell.* Hoeing turnips, digging up tare ground.

THURSDAY—Willingdon School. Boys hoeing swede turnips, earthing potatoes. *Eastdean School.* Boys hoeing parsnips and carrots, thinning out the latter, bearing rejected plants and weeds to the cows and pigs. *Piper.* Hoeing turnips, bringing mould to the mixen. *Dumbrell.* Hoeing turnips and mangel wurzel, digging up rye grass.

FRIDAY—Willingdon School. Boys wheeling manure, part of the afternoon wet. *Eastdean School.* Wet weather, boys in school all day, or plattting straw, spearing potatoes, or beehive making. *Piper.* Hoeing turnips. *Dumbrell.* Hoeing turnips, transplanting mangel wurzel, digging ground.

SATURDAY—Willingdon School. Boys earthing up potatoes. *Eastdean School.* Boys hoeing and transplanting turnips, watering cabbages, cleaning out piggery, portable pails, and school room, and turning dung mixen. *Piper.* Gathering dung under trees where the cows stand to inhale the fresh breezes. *Dumbrell.* Hosing turnips, applying tank liquid.

Yorkshire.

Operations during the Week.

Slaithwaite Tenants. *John Bamford,* earthing cabbages, hoeing turnips, transplanting swedes to the vacancies on the sown ridges. *C. Varley,* hoeing turnips, emptying tank, &c.

COW-FEEDING.

Willingdon School. Cows stall fed on the second cut of clover. *Dumbrell's.* Two cows stall fed with clover and tares for four days; for two days upon rye grass and tares.

C. Varley's. Cows stall fed on tares, and small turnips.

NOTES AND OBSERVATIONS.

lost which can increase the dunhill. The children of the cottier, so soon as they can walk, should be accustomed to carry something to the dunhill; it would be an occupation for them; and they should be praised, and told—"You have worked well; here, my child, is the best potatoe for you, because you brought enough to bring up four potatoes." And let every child have its own bit of garden.—*L. Valcourt, Paris, Rue Louis-le-Grand, No. 16, August, 1840.*

"This depreciation of the human race is one of the most serious errors of our times."

The Cottager's Pet or Pig.—Of such a pig, the first fruits or product of the allotment garden, it is the fashion among political economists to speak in terms of disparagement. Now whatever might be the superior profit to the cottager of saving the money which he spends on his pig, and buying his bacon in the market, this, as it never has been and never will be so saved, we may dismiss.

In the mean time, his pig, besides its usefulness, is also a real pleasure to him; it is one of his principal interests in life. He makes sacrifices to it, he exercises self control for its sake, it prevents him living from hand to mouth, stupidly careless of the future. I am persuaded that a greater act of cruelty could hardly be perpetrated than the discouraging of this practice, or rather amusement and enjoyment among the poor. *Vide Sir H. Doyle's Report.*

"Let us endeavour then, to procure for the labourer his cow, his pig, and the other comforts he possessed in the times of merry England." *Mr. J. Leigh's Speech.*

Labouring Men.—Let us strive to add to the innocent enjoyment of all classes, especially of the poorest, who are necessarily debarred from so many gratifications. Let every labourer have good food at all events; and try hard at good meat for himself, tea and coffee for his wife, and milk for his children; but be taught to deny himself such things as may very well be spared, without lessening his strength, or impairing his health. The cares of life too must be forgotten at intervals, and amusements are necessary in proportion to those cares. "If a man chooses to kill himself by over much food, spirits, ale, or tea, he is to be pitied and avoided." Few men, however, with comforts at home, will kill themselves either there or elsewhere by drinking. Make labourers comfortable at home, give them but a small "stake in the hedge,"—their field garden,—in general they will avoid excesses,—become fond of domestic pleasures,—and their children will learn habits of industry, to the benefit of themselves and their country.

WHAT GOOD HAS IT DONE ?*Genuine Yorkshire Enquiry.*

Providence never sends mouths but it sends meat.—*Old Proverb.*

Fruits of Field Gardening at Eastbourne.—I have been favoured with a letter from Mrs. DAVIES GILBERT which shows, in a most striking manner, what has resulted from Belgian farming on her estates, and will inspire us with hopes of its success elsewhere.

"JOHN HARRIS," says she, "the Eastdean schoolmaster, who was taken from the Eastbourne Union House a few years ago, with his wife and seven children, last Michaelmas-day, the very day it became due, paid the last rent of his land of five acres; after which I saw his two cows, which are thriving in the stable—one pig nearly ready to kill—another with thirteen pigs a month old—a stack of oats—six pies of potatoes in the field—turnips, mangel wuzel, rape and clover growing. It being Saturday, his sons were thrashing out his wheat in the school room, while his scholars were digging his land, much of which was ready for the next crop."

How remarkable the contrast with what follows, contained in the same letter. "I had a maid who lived with me thirteen years, and married my coachman who had lived with me seven years. Taking a farm of, I believe, 100 acres, he sunk his own money, and his relations say died of grief for the loss of it, leaving his widow with three children, who is come into my house, and I hope will live well as schoolmistress on 5 acres!"

"Man is the master piece of creation; he is better than money, house, or land."

Humble Wealth.—I select another instance in JESSE PIPER. He evidently with much satisfaction, at Christmas last, being out of debt, described the treasures of his little farm, more precious to him than the rich man's abundance.

From an acre of wheat, except two or three rods, he had 37 bushels of grain, and 130 trusses of straw: and ten stray oxen had destroyed him several bushels just before harvest. He has 250 bushels of potatoes, from three-quarters of an acre; four tons of turnips; two tons of carrots; his lucerne he has cut five times, the worth of it 30s.; onions ten bushels, worth £2; carrot seed £1; turnip seed 10s.; barley, four bushels, 12s.; four bushels of peas, worth 12s.; hay, one and three-quarters tons, worth £5; one cow, worth to him quite £10 a-year, and last year he bought one for £4, which will calve in three weeks, and sell then for £8; and to crown all his riches, three hogs, each weighing 28 stones!! Much better situate is this poor but intelligent man, than were he in the Union house, as might have been the case, at a cost, of his own maintenance and that of his family to his country, broken down in spirit, discontented, and unhappy.

Can it be, in this age of intelligence, that they whose labours are the most necessary find employment the most precarious.

Method of destroying Poors' Rates and Pauperism.—In 1842, when applications for relief from the distressed manufacturers were overwhelming, and the cry was give us work, it is not charity we want, “a committee in the village of Farnley Tyas, near Huddersfield, begged £40 of the Manufacturer's Relief Committee, and procured five acres of land, which these men were paid for cultivating, and after keeping an accurate account of all expenses of rent, &c., as well as money paid for spade labour, the PRODUCE was found to overbalance the outlay, and the £40, which if given like Poor Rates would have sunk the first year, RE-PRODUCED from the soil, afterwards paid the same persons for again cultivating it, evidently showing, that where the HUMBLE BOON is granted of men being allowed to cultivate their native soil, they can be payers instead of receivers of rates.” After the second year's trial, (Dec. 3, 1844,) the £40 is still untouched, and ready to be applied in finding spade labour for the unemployed, and will probably continue a PERMANENT FUND. This demonstrates clearly, that if the Poors' Rates were applied in a similar manner they might mainly be kept together, as far at least as the casual poor are concerned.—*Vide Essays on Farms and Schools of Industry. Simpkin & Marshall, London.*

Knowing that this experiment involves one of the greatest public questions, the zealous attention of the Rev. T. MINSTER, Mr. J. LEIGH, and the other members of the committee, has been keenly devoted to its promotion, and the author of this little book has, within a few days, received with gratification letters of enquiry from Norwich, Buckingham, and Hereford, to learn the results of the second year's trial; in which cities an introduction of the plan is intended on a comprehensive scale. He takes the present opportunity of intreating that there may be no failure through mismanagement; it is a question of vital interest, where one failure might be of serious consequence to the country at large.

WHAT GOOD WILL IT DO?

Genuine Yorkshire Enquiry.

“If you wish to argue with a man talk to him through his ears; if you wish to convince him talk to him through his eyes: set the experiment fairly before him: let him have it at his very door: he will first observe it, then he will consider and investigate it, and then, having observed, considered, and criticized, he comes to the conclusion that he can do the same thing better; and so he tries the experiment.”—*Mr. Thynne's speech in awarding the Dartmouth Prizes.*

Field Gardening at Slaithwaite.—The Sussex returns have been instrumental in producing the following surprising results in a single year.

F. THYNNE, Esq. in awarding the Earl of DARTMOUTH's prizes to the field gardeners, said he gave with the greatest pleasure

the first prize ever distributed there for spade husbandry,—he awarded it to JOHN SYKES for wheat, who although the place where it was grown was lately an old stone quarry, yet he had, by his industry, raised from a quarter of an acre 745lbs., which was equal to 2,980lbs., or 6 quarters and 2 bushels (60lb. to the bushel) to the acre, and all this was accomplished by the spade!! To JOHN BAMFORD he awarded the second prize, whose produce was 46 bushels to the acre, and considering the situation of his land, was quite equal to that of the successful competitor for the first prize. The third candidate was C. VARLEY, whose produce averaged 40 bushels to the acre.

JAMES BAMFORD had, during the year, raised two crops. On one plot of ground peas and beans mixed had been sown for soiling in March and April, which were cut in July, and produced 30 tons to the acre of green food. Turnips were then sown, which were in part gathered under his own inspection that day, and weighed, yielding, on calculation, 10 tons of bulb, and 12 tons of top, and better turnips he had never seen. At Farnley Tyas he said it gave him sincere pleasure to award the prize to a hard working labourer, DANIEL Wood, who had produced 210lbs. of potatoes from a single rod of land worked by the spade.

Mr. BAMFORD produced his balance sheet, worked out in a very superior manner, from which it appeared, that this extraordinary quantity of labour bestowed upon the land will decidedly *pay*. It was proved in the clearest manner, that in an unfavourable season like the last, the labouring man may secure his 2s. per day, besides a moderate profit at the end of the year. This is more than corroborated by Mr. THORNTON's experience, on employing the paid labourer at his model farm at Paddock, near Huddersfield, and after the most careful and rigid investigation. Hence it follows, that the land may most safely be made use of as a *savings' bank* for labour, and a secure refuge for unemployed manufacturers.

NEW PLAN OF FIELD ALLOTMENTS.

At Farnley Tyas, Mr. THYNNE appealed to the christian feelings of the tenantry on the desirableness that such as had cottages should allot a rood of land to each cottager, thus giving him a share and interest in the property of the land. The tenantry have followed the suggestion, and the plan is now being introduced, so that in a short time there will not be a cottage in that township without its rood of field garden. Each farm will have its appendage of cottage gardens, and its property will thus be defended from intrusion by its natural guardians the labourers or cottagers employed or living upon it. By putting their own spare labour, or that of their children, into these "*nooks of the farm*,"—these poor men's vineyards,—a winter store of at least potatoes and bacon will thus be provided.

The rents of these *farm gardens* will be the usual farmer's rents, with the addition of rates and taxes. Moreover, a committee may act as a kind of "*board of control*" over the cultivation of the field gardens, and, morally, as a check to the reduction of the wages of labour to too great an extent,—a practise not more repugnant to the feelings of every christian man, than contrary, in the end, to the true interests of the employer. Would that all were persuaded of this great truth.

RULES PROPER FOR ALLOTMENT TENANTS.

The objects of the committee are—to encourage industrious habits amongst the manufacturing or agricultural labourers, by letting small portions of land to them under the following

RULES.

1. To be tenants from to ; either party may put an end to the agreement by giving notice.
2. The land to be cultivated entirely by manual labour.
3. No occupier to work on the sabbath day.
4. Fences of the field to be kept in good and sufficient repair by the occupier.
5. Any occupier who shall be convicted before a magistrate of an offence against the laws, to lose his allotment immediately, and to be allowed by the committee the value of growing crops.
6. All disputes between tenants shall be referred to the committee, whose decision shall be binding.
7. No occupier shall trespass on adjoining land.

Any violation of the above Rules to be punished by loss of allotment.

FORM OF AGREEMENT.

I, of the Parish of do agree to take of
Land of the Cottage Allotment Committee, at the yearly rent
of subject to the Regulations above specified.

As witness my hand, this day of

Signed by

in the presence of

ROTATION CROPS

For a Cottage Allotment, or small Farm of several acres.

1	Oats or Barley laid	B	down in clover.
2	Clover for		Sowing.
3	Autumn Potatoes followed		by Rape or Stubble Turnips
4	Winter		Potatoes.
5	Tares followed by Rape....		or Stubble Turnips.
6	Winter		Potatoes.
7	Turnips		Turnips.
	House, Offices, and Yard,..	A	Garden.

From A to B a path is laid down dividing the plots, by which manure is wheeled from the yard, and more easily applied to the right or left hand beds, both under the same crop.

In this plan the same crop returns once in seven years, for instance, take the plot No. 1, which suppose cropped with oats or barley the present year; then the second or next year it will be cropped with clover, the third year with autumn potatoes, and when they come off, with a stolen or double crop that year. The fourth year's crop will be winter potatoes, &c.; after the seventh year the crop will again be followed by oats, &c. Or, take another example. In the 4th division, winter potatoes will be followed by tares and a stolen or second crop, then by winter potatoes the sixth year. Thus, according to Mr. BLACKER's design, on a 2 acre farm, supposing the house, offices, &c., and garden to occupy 1 rood, the field gardener will have one rood of grain, one rood of turnips, three roods of potatoes, one rood of tares, one rood of clover, two roods of stolen crop, viz. rape after tares, and stubble turnips after early potatoes.

T A B L E.

Nutritive power of various substances, deduced from experiment.

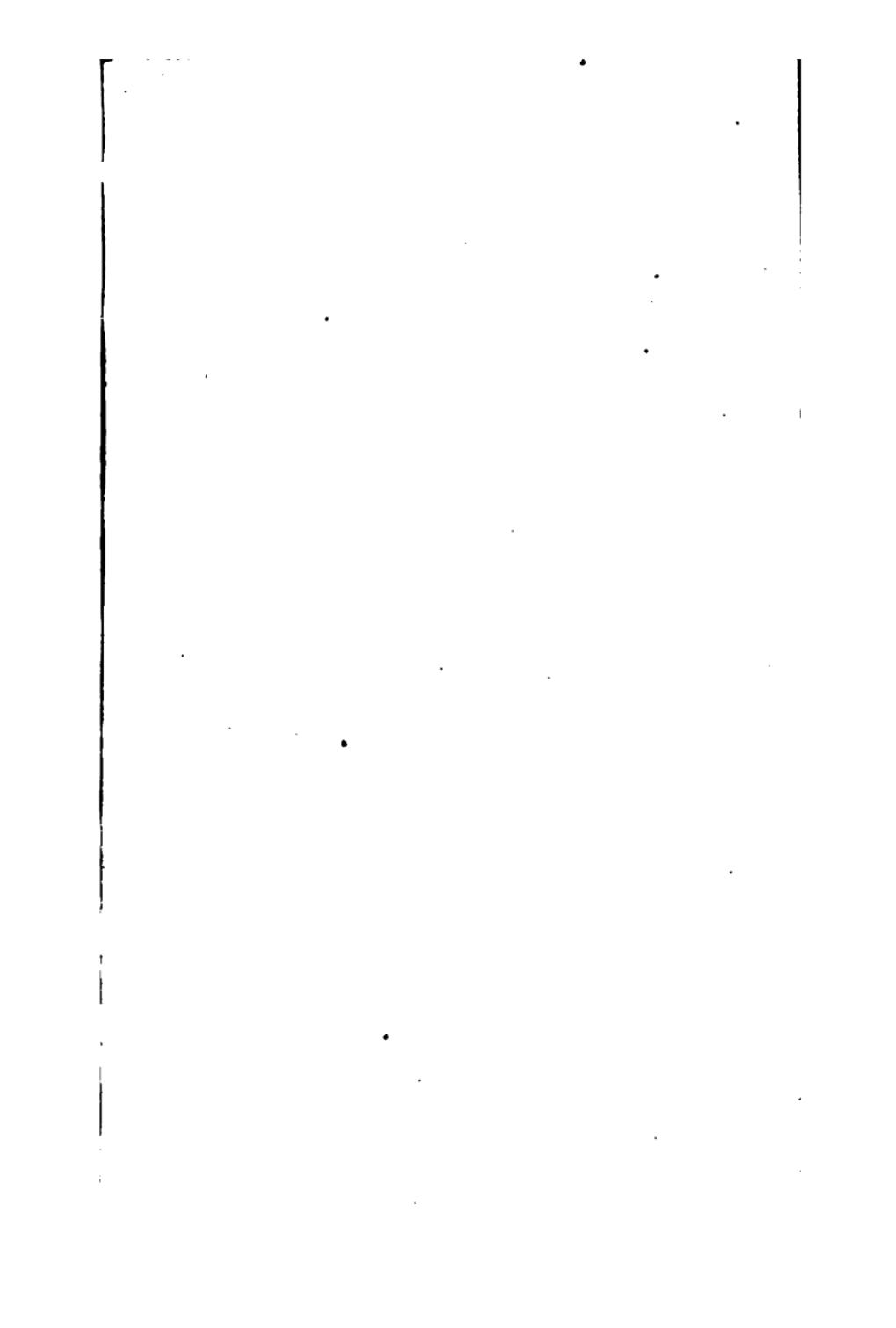
	lbs.	s.	d.
Good Meadow Hay,.....	100 worth	3	8
Good Clover Hay,.....	90 "	3	3
Green Clover,.....	475 "	5	8
Wheat Straw,.....	450 "	10	8
Barley Straw,.....	300 "	3	7
Oat Straw,	300 "	6	3
Pea Straw,	125 "	1	6
New Potatoes,.....	200 "	5	0
Old Potatoes,.....	400 "	10	0
Carrots,	275 "	6	0
Turnips,	500 "	4	6
Cabbage,.....	250 "	3	0
Peas and Beans,	40 "	3	0
Wheat,	40 "	4	0
Barley,.....	55 "	5	0
Oats,	57½ "	3	9
Indian Corn,	55 "	4	7
Vetch Hay,.....	40 "	1	2
Oil Cake,.....	30 "	2	4

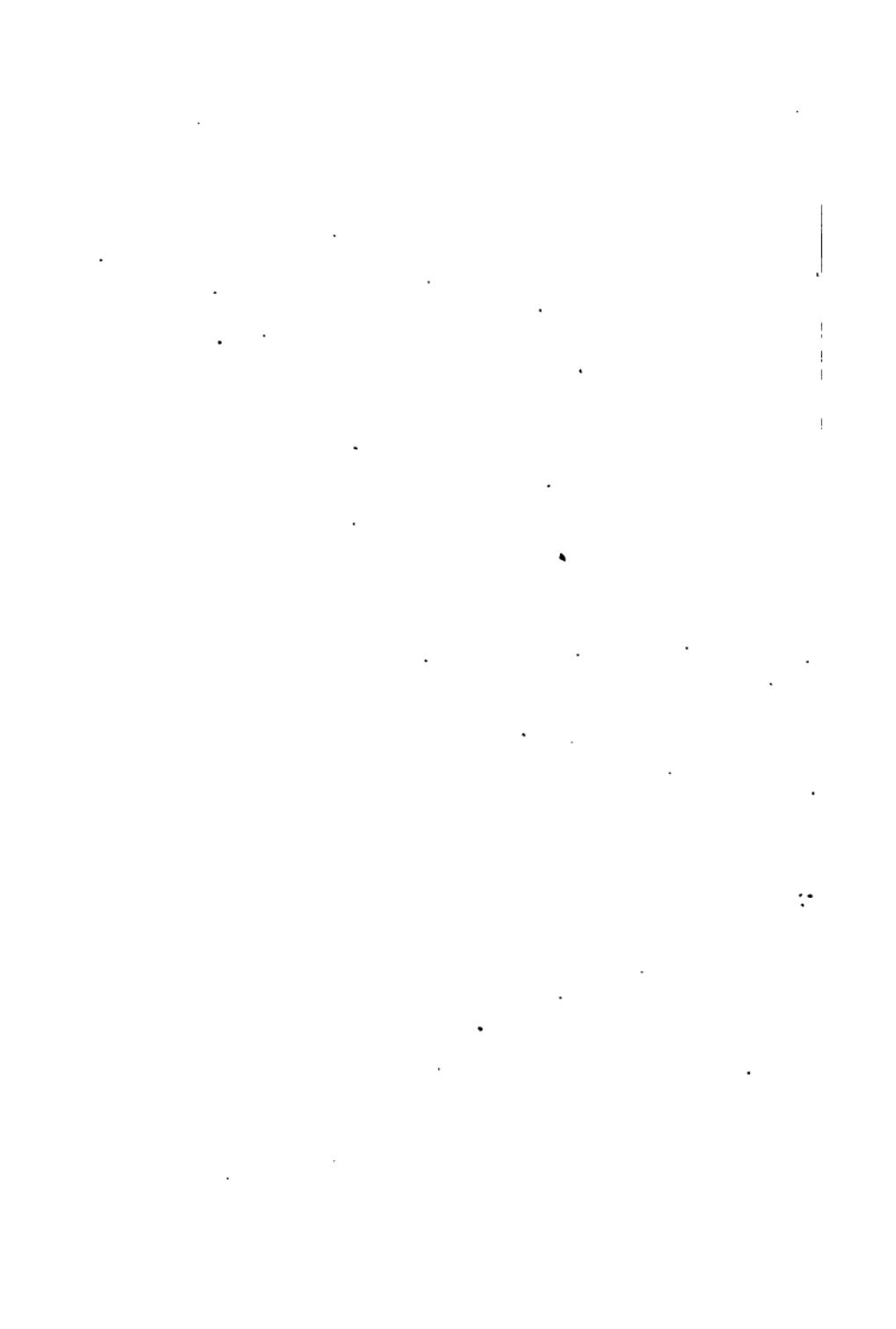
Examples.—Thus, clover, 90lbs., which costs 3s. 3d., is equal in sustaining power, used as cattle food, to 100lbs. of hay, which costs 3s. 8d. Again, oil cake, 30lbs. worth 2s. 4d., is equal to 100lbs. of hay, worth 3s. 8d., and so on.

Union of the Factory and Field Garden.—Meltham Mills are situate in one of those romantic glens near the Appenine chain of hills in the West of Yorkshire. There, Messrs. Brook have extensive cotton and silk mills. They find themselves at the head of a great family of workmen, and feel that "property has its duties as well as its rights." Already a church and school are reared for the benefit of their people, they are chaste in design, they are ornaments of that neighbourhood. There is another ornament, an appendage to the factories, in an Industrial Farm of a few acres, where their unemployed workmen will occasionally be occupied in the pursuits of field gardening.

We may hope also, ere long, to see there the little hands of children employed in such pursuits, and learning to gain their daily bread from the soil, while they receive in the school, during part of the day, a moderate share of learning, as well as the surplus labour of the factory applied to adorn that glen, which, by art, may be made even more beautiful than it was left by nature.

T. KEMP, PRINTER, HUDDERSFIELD.





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